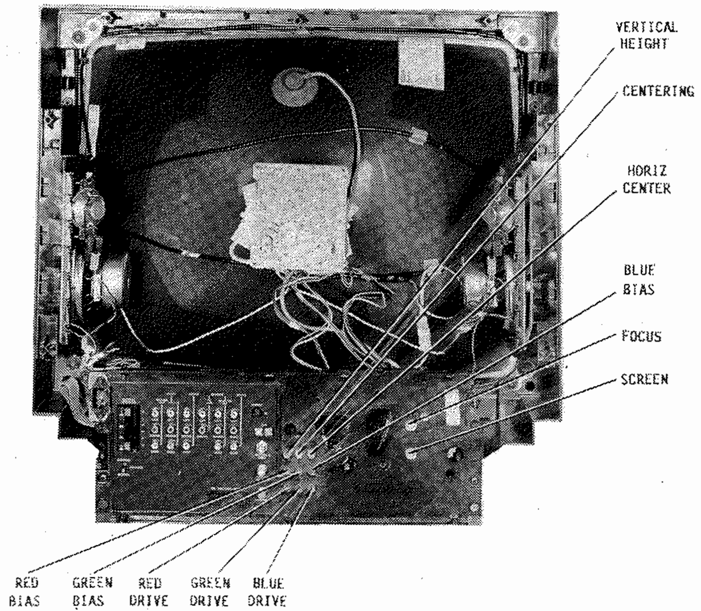


CABINET—REAR VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Remove twelve screws holding cabinet back and remove back. Disconnect HV anode, CRT socket, deflection yoke connector, degaussing coil connector, speaker connector, ground leads, and all required cabling. Lay set facedown on a soft protective surface. Remove two screws on outside bottom of cabinet holding main board assembly to cabinet bottom. Release two latches holding main board assembly and lift board assembly out of cabinet. Slide speaker assemblies out of tracks and cabinet. Stand set up in normal position. Release twelve latches holding cabinet mask and remove mask from front of set. Front panel is accessible for removal at this point of disassembly. Remove front panel from set.

CRT REMOVAL

Follow "Chassis Removal" procedure and lay set facedown on a soft protective surface. Loosen and remove CRT neck assemblies. Remove six screws holding CRT to cabinet front and lift CRT out of cabinet. Do not lift CRT by the neck.

SERVICING IN THE FIELD

CRT IMPLOSION PROTECTION AND CLEANING

Implosion protection is an integral part of the picture tube, cleaning accomplished without CRT removal.

FUSE DEVICES

A 5-amp is used for AC line protection. (See photo, Main Board - Top View.)

VHF/UHF TUNER

See Miscellaneous Adjustments.

CHANNEL TUNING

Channel Up and Down buttons are provided for channel scanning with ten numbered buttons (on remote transmitter) provided for one or two digit entry direct access channel selection. Fine tuning is automatic with fine tuning Up and Down buttons provided for additional fine tuning.

HORIZONTAL OSCILLATOR

Adjustment of the horizontal hold is accomplished by the proper setting of the Horiz frequency coil.

HIGH VOLTAGE

For high voltage procedure, refer to Miscellaneous Adjustments.

WIDTH

The horiz width may be varied by adjusting the horiz width control. (See photo, Main Board - Top View.)

FOCUS

The focus may be varied by a focus control. (See photo, Cabinet - Rear View.)

AGC

The RF AGC may be varied by an RF AGC control. (See photo, Main Board - Top View.)

CENTERING

Horizontal centering is accomplished by proper adjustment of the horizontal centering control and Switch (See photo, Cabinet - Rear View.)

Vertical centering is accomplished by proper adjustment of the vertical centering control. (See photo, Cabinet - Rear View.)

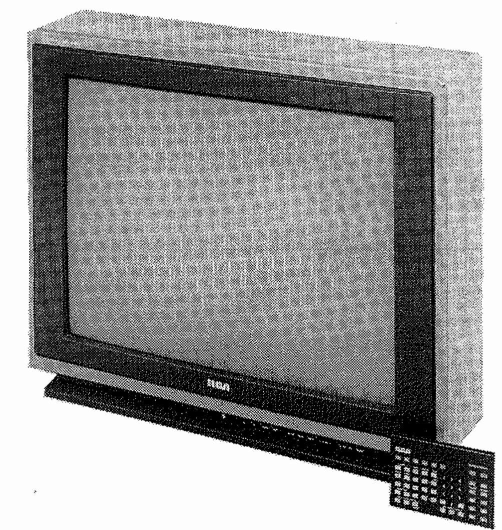
SAMS PHOTOFACT®

RCA CHASSIS CTC140AJ

For Supplier Address See PHOTOFACT Index

Reprint for SUC master 8/10/95

MODEL	CHASSIS
F27100AKF01	CTC140AJ
F27101MMF01	CTC140AJ
F27107EGF01	CTC140AJ
F27110NGF01	CTC140AJ
F27122TNF01	CTC140AJ
F27123SBF01	CTC140AJ
F27150BHF01	CTC140AJ
F27155AKF01	CTC140AJ
G27130TNK01	CTC140AD
G27140TNK01	CTC140AJ
G27143TNC01	CTC140AJ
G27149TKC01	CTC140AJ
G27250CPC01	CTC140AJ
G27251TNC01	CTC140AJ
G27255NPC01	CTC140AJ
G27259HPC01	CTC140AJ
G27340CKC01	CTC140AJ
G27350CPC01	CTC140AJ
G27360GMC01	CTC140AJ



Model F27100AKF01

SAFETY PRECAUTIONS

See Page 1.

INDEX

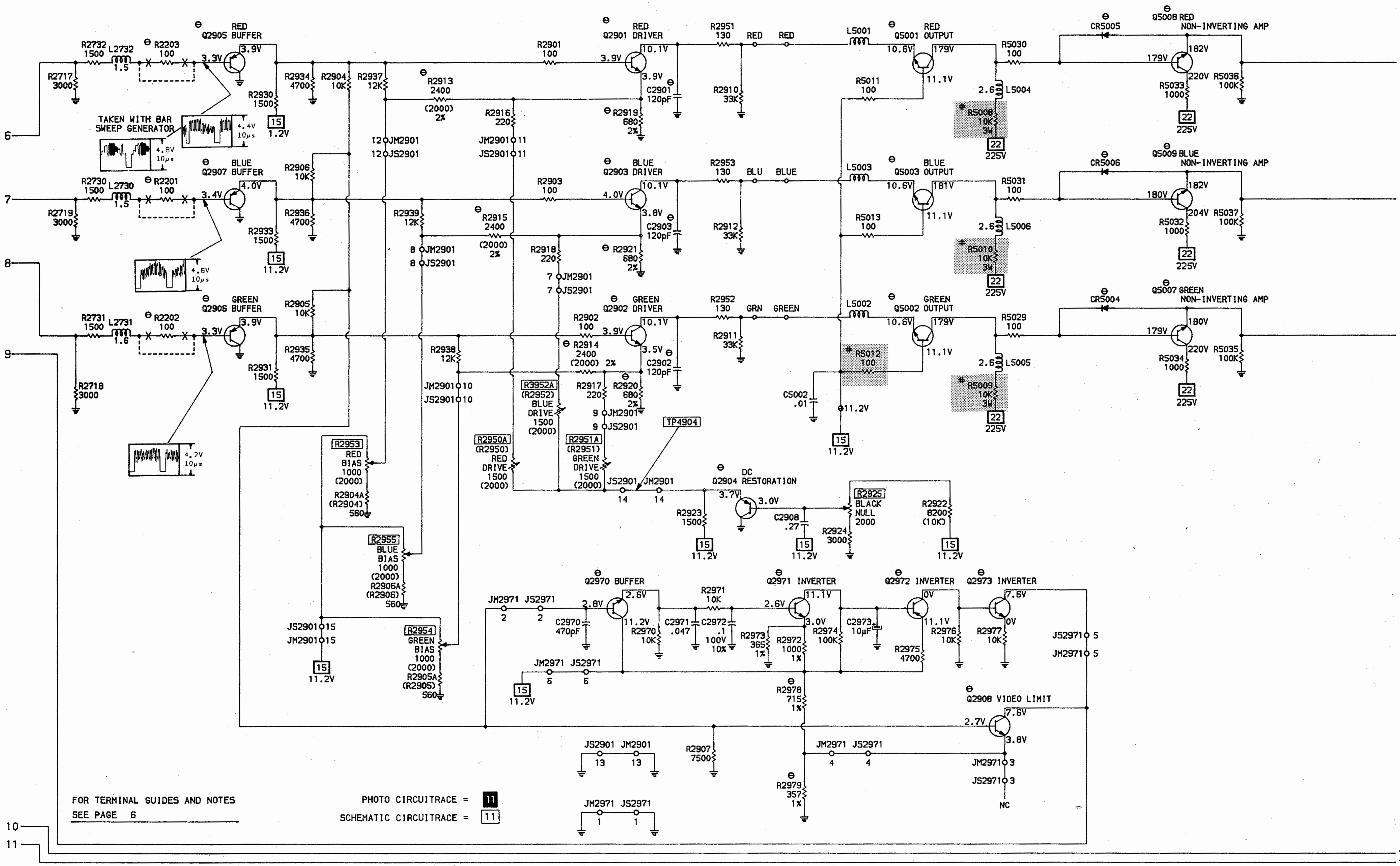
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RCA
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A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE®

LUMA/CHROMA

TEST EQUIPMENT

Test Equipment listed by Manufacturer illustrates typical or equivalent equipment used by SAMS' Engineers to obtain measurements and is compatible with most types used by field service technicians.

Equipment	B&K Precision Equipment No.	Sencore Equipment No.	Notes
OSCILLOSCOPE	1541A, 2120, 2125, 2160	SC61	
GENERATORS			
RGB	1249, 1260	RG67	
MULTIBURST SIGNAL	1251, 1260	VA62A	
COLOR BAR	1211A, 1249, 1251, 1260	VA62A, CG25, NT64	
ANALOG VOM	114, 117, 177, 214		
DIGITAL VOM	388HD, 2900 SERIES	DVM37, DVM56A, SC61	
FREQUENCY METER	1803, 1804, 1805	FC71, SC61	
HI-VOLTAGE PROBE VOM/DMM Accessory probes	HV-44 PR-28(HV)	HP200 TP212	
ISOLATION TRANSFORMER	TR110, 1604, 1653, 1655	PR57	
CAPACITANCE ANALYZER	820, 810, 830	LC76, LC101, LC102	
CRT ANALYZER	467, 470, 480, 490	CR70	
TEMPERATURE PROBE	TP-28, TP-30		
AC LEAKAGE TESTER	1655	PR57	
LOGIC PROBE	DP51, DP21		
LOGIC PULSER	DP101, DP31		
INDUCTANCE ANALYZER	875A	LC76, LC101, LC102	
FLYBACK YOKE TESTER	875A	VA62A, LC76, LC101, LC102	
TV STEREO GENERATOR	2009	ST65, ST66	
TV STEREO POWER MONITOR		SR68	
FIELD STRENGTH METER		FS73, FS74	
TRANSISTOR TESTER		TF46	
VIDEO ANALYZER		VA62A	

TV ALIGNMENT INSTRUCTIONS

Use an isolation transformer and observe power supply polarity. Maintain line voltage at 120V AC. Allow a 20-minute warm-up period for receiver and test equipment.
Suggested Alignment Tools: GC-THORSEN
L2301, L2306, L2308, L2312, L2313, L2602 9440

PRELIMINARY INSTRUCTIONS

Set the channel selector to the highest unused channel. Set scope sweep to external. Connect scope vertical input to scope vertical input on sweep/marker generator. Connect scope external horizontal input to scope horizontal input on sweep/marker generator. Ground test equipment to TV chassis unless specified otherwise. Use only enough generator output to provide a usable indication.
Note: Response may vary slightly from that shown.

NOTE: L2304 and L2305 are factory adjusted. No adjustment is recommended.
Connect a 5.3V Bias to TP330 (Pin 30 U2300).

VIDEO IF ALIGNMENT (SWEEP MARKER GENERATOR)

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To JW2302	To JW2503	44MHz (10MHz Sweep	41.25MHz 45.75MHz 47.25MHz	Adjust L2301 for MINIMUM 47.25MHz adjust L2312 for Maximum 45.75MHz without affecting symmetry of response. See Figure 1.

TV ALIGNMENT INSTRUCTIONS (Continued)

VIDEO IF ALIGNMENT (BAR SWEEP GENERATOR)

BAR SWEEP GENERATOR	SCOPE INPUT	REMARKS
To JW2302	To JW2503	Perform Video IF Adjustments per SWEEP/MARKER GENERATOR instructions. See Figure 2.

SOUND IF ALIGNMENT

Tune in a station and adjust L2306 for maximum sound. Reduce signal strength at the antenna terminals until distortion appears. Continue to reduce the signal while aligning for undistorted output by adjusting L2308.

AUTOMATIC FINE TUNING ALIGNMENT

Connect as explained in preliminary instructions unless specified otherwise.

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To JT2005	To JW2302	44MHz (10MHz Sweep)	45.75MHz	Adjust L2313 to place 45.75MHz marker at crossover as shown. See Figure 3.

RCA CHASSIS CTC140AJ

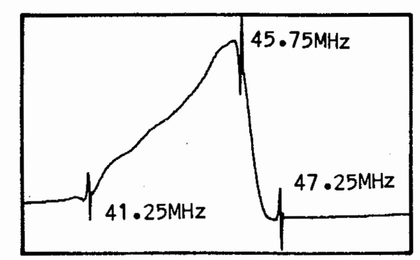


Figure 1

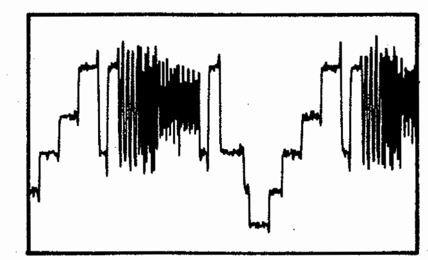


Figure 2

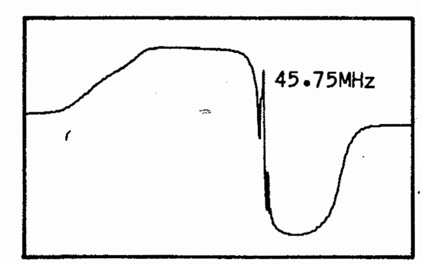
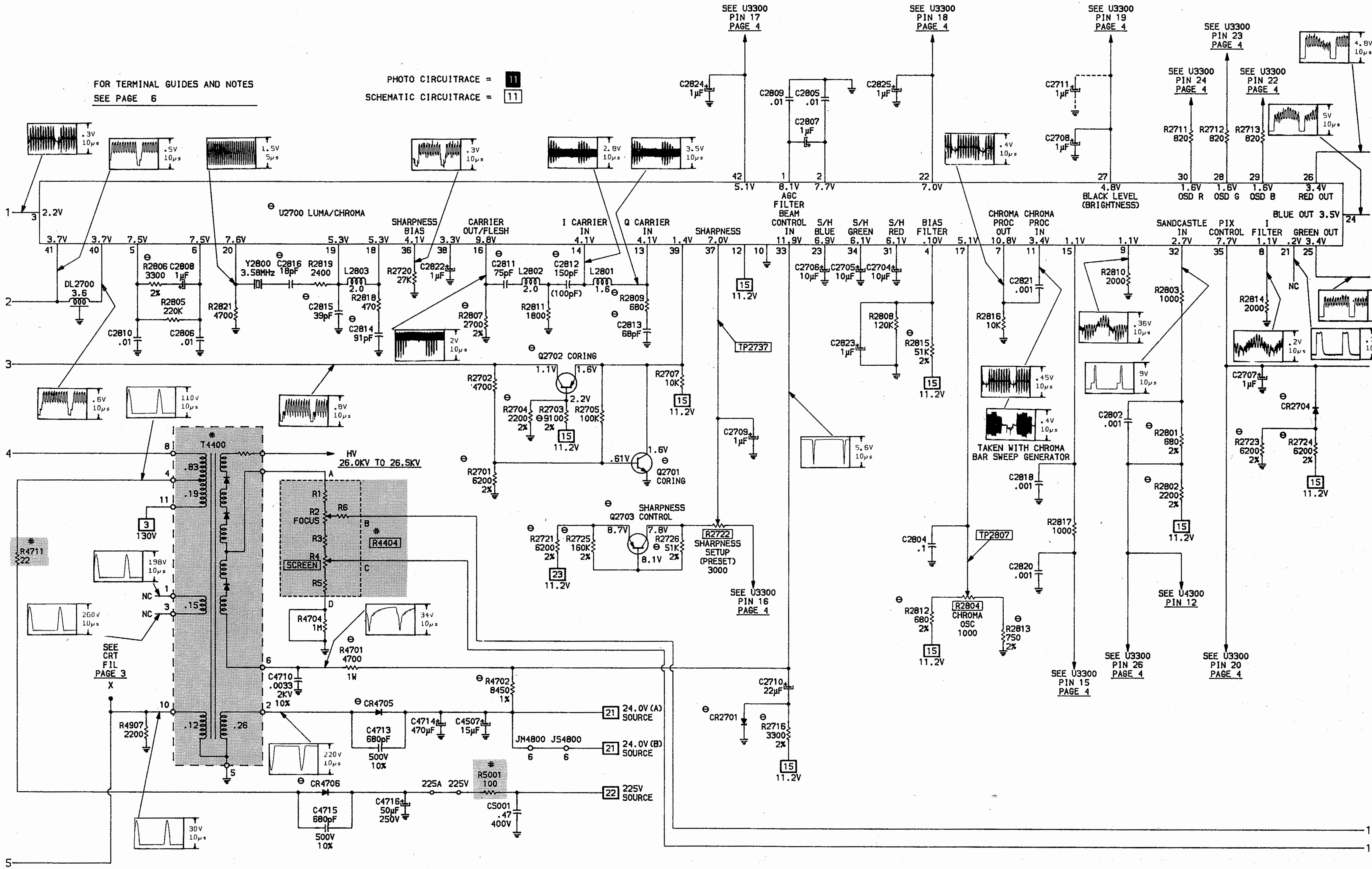


Figure 3

FOR TERMINAL GUIDES AND NOTES
SEE PAGE 6

PHOTO CIRCUITRACE = 11
SCHEMATIC CIRCUITRACE = 11



LUMA/CHROMA

CTC 140J

SAFETY PRECAUTIONS

SERVICE WARNING

Service work should be performed only by qualified service technicians who are familiar with safety checks and guide lines.

1. For continued safety, no modification of any circuit should be attempted unless recommended by manufacturer.
2. Disconnect power source before replacing parts as some parts may be electrostatic sensitive.
3. Use an isolation transformer between the line cord and power receptacle, when servicing chassis.

SERVICING HIGH VOLTAGE AND PICTURE TUBE

When servicing the High Voltage circuits, extreme caution should be used.

1. Discharge static High Voltage by connecting a 10 kohms resistor in series with a test lead between chassis and anode lead of picture tube.
2. Wear shatter-proof eye protection (goggles) when handling the picture tube in case of implosion.
3. DO NOT lift picture tube by the neck.

X-RAY RADIATION AND HIGH VOLTAGE LIMITS

Service personnel should be aware of the procedures and instructions covering x-ray radiation. The only potential source of x-ray in present day solid state receivers and monitors is the picture tube.

1. It is only when High Voltage is excessive that x-ray radiation is capable of being emitted from shell of picture tube. Be sure the High Voltage is set at specified level.
2. An accurate High Voltage meter should be available at all times. Meter calibration should be checked periodically.
3. High Voltage should be kept at rated value - NO HIGHER. Higher voltages may cause x-ray radiation or failure of other associated components. DO NOT depend on protection circuit to keep voltages at rated value.
4. Every time a chassis is serviced, High Voltage should be checked at various brightness levels to be sure it is regulating properly.
5. While troubleshooting a set with excessive High Voltage, avoid being close to picture tube. DO NOT operate longer than it is necessary to locate the cause of excessive High Voltage. Use a variable AC transformer to regulate voltage.
6. Many components, electrical and mechanical, in present chassis have safety related characteristics which are not evident with visual inspection. When these components are known, they are identified with a # on the schematic and in the parts list. When replacing these components, for SAFETY, use only an equivalent replacement part.

SAFETY CHECKS-FIRE AND SHOCK HAZARD

Cold Leakage Checks (Sets with isolated ground.)

1. Unplug the AC cord and connect a jumper across the two prongs on the plug.
2. Turn on power switch.
3. Measure the resistance, with an Ohm meter, between the jumpered AC plug and any exposed metal cabinet parts on the set such as: antenna screw heads, control shafts, handle brackets. Exposed metal parts that have a return path should measure between 200 kohms and 5 megohm. Parts without a return path must measure infinity.

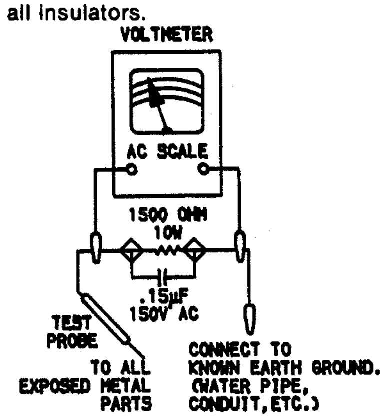
Leakage Current Hot Check

1. Plug the AC cord directly into AC outlet. DO NOT use an isolation transformer.
2. Connect a 1500 Ohm 10 watt resistor, in parallel with a .15µF 150V AC capacitor, between any exposed metal parts on the set and a good earth ground such as a water pipe. (See Figure below.)
3. Using an AC volt meter, with 1000 Ohms per volt or more sensitivity, measure the voltage across the resistor. Check each exposed part and measure voltage at each point.
4. Reverse the AC plug and repeat voltage measurement at each point.
5. The voltage at any point should not exceed .75 volts RMS. This corresponds to .5 milliamps AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected.

GENERAL GUIDE LINES

A final SAFETY check before returning the set to customer.

1. Check area repaired for poorly soldered or de-soldered connections. Check entire circuit board surface for solder splashes.
2. Check interboard wiring for pinched wires or wires contacting any high-wattage resistors.
3. Check that all control knobs, shields, covers, grounds and mounting hardware have been replaced. Be sure to replace all insulators.



TEST JIG HOOKUP

FUNCTION	Chek-A-Color ADAPTER NO.			
		PLUG #P4400	PIN 1,2	RED
			PIN 3,4	BLUE
CRT	B239	P.C. BOARD	PIN 1	YELLOW
YOKE	D4142	PLUG #P4500	PIN 2	GREEN
YOKE SETTING	YP1 FOCUS TAP			

TROUBLESHOOTING

POWER SUPPLY

Check the C Fuse (F401). If it is open, check Rectifier Diodes (CR4001 thru CR4004), Capacitors C4002 thru C4007, C4009, C4101, C4102 and C4104, Vipur Output Transformer (T4100), Vipur Output FET (Q4100) and Vipur Regulator IC (U4100). Apply 120V AC and depress the Power Switch. If the voltage at the base of Shut-Down Transistor (Q4900) is more than 10V, the set may be in shutdown. Refer to the "High Voltage Shutdown" section of this Troubleshooting guide. Check for 160V* at the cathode of Rectifier Diode (CR4003). If this voltage is missing, check Line Filter Choke (L4001), Vipur Output Transformer (T4100), Vipur Output FET (Q4100), and Horizontal Output Transistor (Q4400). If 160V* is present at the cathode of CR4003, check for 130V at TP4058. If this voltage is missing, check voltages and components associated with Rectifier Diode (CR4701). If 130V is present at TP4058, refer to the "Horizontal" section of this Troubleshooting guide. If the voltage at TP4058 continuously rises and falls, refer to "High Voltage Shutdown" and "Horizontal" section of this Troubleshooting guide.

*With respect to isolated ground.

HORIZONTAL

Determine if the TV is in shutdown, refer to "High Voltage Shutdown" section of this Troubleshooting guide. If the TV is not in shutdown, inject a horizontal signal at base of Horizontal Output Transistor (Q4400). If horizontal deflection is now present, check voltages, waveforms and components associated with pins 2, 3, 5, 6, 7, 8 and 10 of Deflection IC (U4300) and Horizontal Driver Transistor (Q4300). If there is no horizontal deflection, check voltages, waveforms and components associated with pins 2, 3, 5, 6, 7, 8 and 10 of Deflection IC (U4300) and Horizontal Driver Transistor (Q4300). If there is no horizontal deflection, check voltages, waveforms and components associated with Horizontal Output Transistor (Q4400) and Horizontal Transformer (T4400). Check Rectifier Diodes (CR4705 and CR4706) and associated components for defects. The High Voltage Rectifier is part of Transformer T4400 and if defective will affect the operation of horizontal circuits. If horizontal oscillator is off frequency, check voltages, waveforms and components associated with pin 6 of U4300. Horizontal linearity or foldover problems may be caused by Capacitors C4400, C4401, C4402, C4403, C4404, C4405, C4406 and C4409 being defective.

HIGH VOLTAGE SHUTDOWN TEST

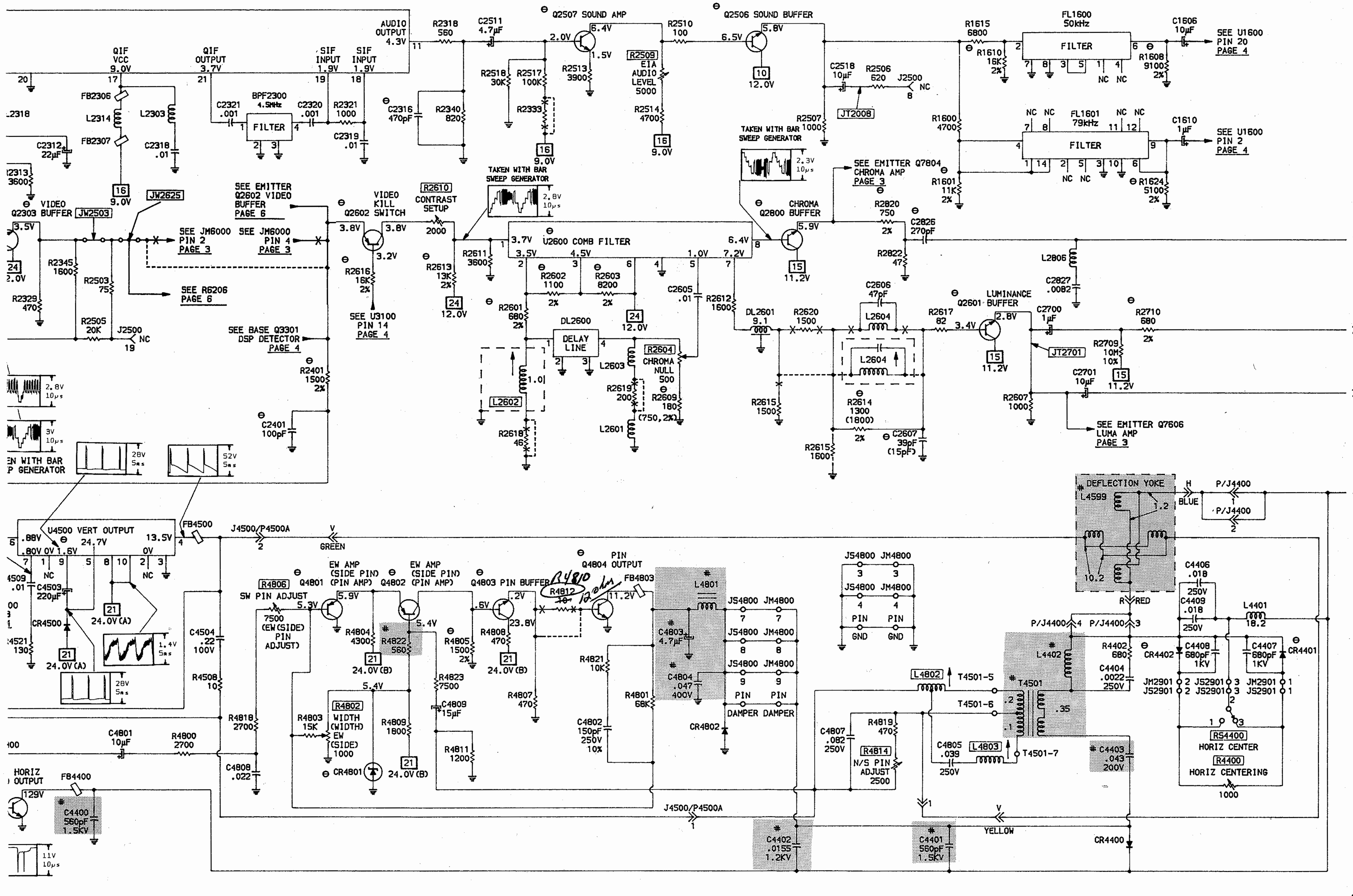
Apply 120V AC to set, turn set On and adjust for normal operation. Using a jumper wire, short XT1 to XT2, the set operation. Using a jumper wire, short XT1 to XT2, the set should immediately lost raster and sound. If the set does not lose raster and sound, the High Voltage Shutdown circuit should be repaired. Remove the jumper and set should resume normal operation.

HIGH VOLTAGE SHUTDOWN

The high voltage is monitored by Diode (CR4900) rectifying pulses from Horizontal Output Transformer (T4400). If the high voltage increases, the voltage at cathode of CR4900 will also increase. This voltage is fed to base of Shut-Down Transistor (Q4900). When the voltage at base of Q4900 increases above approximately 10.0V, Q4900 stops conducting, shutting the set down. When this happens, Vipur Regulator IC (IC4100) initiates a slow start cycle which slowly increases the B+ voltage until a fault is detected. The Vipur Regulator IC repeats this process until the fault is corrected or power is removed from the set.

IF-AGC

Inject an IF signal at the IF input and check for video on the CRT. If video is present, check Tuner, Tuner Control, Tuner AFT and Tuner AGC circuits. If there is no video on CRT, check for a waveform at JW2503. If video is present at JW2503, refer to "Video" section of this Troubleshooting guide. If there is no video at JW2503, apply AGC bias to pin 3 of Dual IF IC (U2300). If video is now present at JW2503, check voltages, waveforms and components associated with AGC circuit at pins 1, 2, 3, 13, 14 and 30 of U2300. If there is no video at JW2503, check voltages, waveforms and components associated with pins 1 thru 7 and 24 thru 30 of U2300, IF Amp Transistor (Q2300), Video Buffer Transistor (Q2303) and Video Clamp Transistor (Q2302). A defective AGC circuit can cause an overloaded picture, excessive snow or loss of picture and sound.


Q2507 SOUND AMP
Q2506 SOUND BUFFER
AUDIO OUTPUT 4.3V
QIF VCC 9.0V
QIF OUTPUT 3.7V
SIF INPUT 1.9V
SIF INPUT 1.9V
BPF2300 4.5MHz
FILTER
R2509 EIA AUDIO LEVEL 5000
FL1600 50kHz
FILTER
SEE U1600 PIN 20 PAGE 4
FL1601 79kHz
FILTER
SEE U1600 PIN 2 PAGE 4
TAKEN WITH BAR SWEEP GENERATOR
SEE EMITTER Q7804 CHROMA AMP PAGE 3
Q2800 CHROMA BUFFER
Q2303 VIDEO BUFFER
JW2503
JW2625
SEE JM6000 PIN 2 PAGE 3
SEE JM6000 PIN 4 PAGE 3
SEE EMITTER Q2602 VIDEO BUFFER PAGE 6
Q2602 VIDEO KILL SWITCH
R2610 CONTRAST SETUP 2000
U2600 COMB FILTER
SEE R6206 PAGE 6
SEE U3100 PIN 14 PAGE 4
SEE BASE Q3301 DSP DETECTOR PAGE 4
DL2600 DELAY LINE
R2604 CHROMA NULL 500
Q2601 LUMINANCE BUFFER
JT2701
JT2008
SEE EMITTER Q7606 LUMA AMP PAGE 3
DEFLECTION YOKE L4599
BLUE
RED
GREEN
YELLOW
P/J4400
U4500 VERT OUTPUT
J4500/P4500A
Q4801 EW AMP (SIDE PIN)
Q4802 EW AMP (SIDE PIN) (PIN AMP)
Q4803 PIN BUFFER
Q4804 PIN OUTPUT
R4806 SW PIN ADJUST 7500 (EW(SIDE) PIN ADJUST)
R4802 WIDTH (WIDTH) EW (SIDE) 1000
JS4800 JM4800
PIN GND
PIN DAMPER
R4814 N/S PIN ADJUST 2500
T4501
L4802
L4803
HORIZ OUTPUT
RS4400 HORIZ CENTER
R4400 HORIZ CENTERING 1000
CR4400
1
2
3
4
5

See AGC Voltage Chart for voltages with signal.

AGC VOLTAGE CHART

U2300

Pin 2	2.6V
Pin 3	9.22V
Pin 30	8.85V

AUDIO

Select an active TV channel and check for an audio waveform at pin 11 of Dual IF IC (U2300). If there is no audio, check voltages, waveforms and components associated with pins 7 thru 11 and 15 thru 23 of U2300. If audio is present at pin 11 of U2300, select a station that is transmitting a stereo signal and check for 0.67V at pin 29 and an audio waveform at pins 8 and 16 of TV Sound/MPX Demodulator IC (U1600). If the waveforms and proper voltage are missing, check voltages, waveforms and components associated with pins 8, 15, 16 and 18 thru 29 of U1600. If waveforms are present and proper voltage is missing, check voltages, waveforms and components associated with pins 21 thru 29 of U1600. If audio waveforms are present at pins 8 and 16 and proper voltage at pin 29 of U1600, check voltages, waveforms and components associated with pins 3 and 12 of TV Sound DBX Decoder IC (U1601). If there is no audio, check voltages, waveforms and components associated with pins 3 and 12 of U1601 and 15kHz Filters (FL1602 and FL1603). If there is audio at pins 3 and 12 of U1601, check for audio at pins 15 and 16 of U1601. If there is no audio at pins 3 and 12 of U1601, check for audio at pins 15 and 16 of U1601. If proper waveforms are present at pins 15 and 16 of U1601, select Stereo mode and check for audio at pins 13 and 14 of U1600. If there is no audio, check voltages, waveforms and components associated with pins 9 thru 14 and 17 of U1600. Select a sttion that is transmitting a SAP signal, select SAP mode and check for SAP audio at pin 13 and 14 and 0.67V at pin 30 of U1600. If there is no audio and voltage is improper, check voltages, waveforms and components associated with pins 1 thru 7 and 30 of U1600. If there is audio at pins 13 and 14 of U1600 in Mono/Stereo/SAP, check for audio in any mode at pins 6 and 11 of U1800. Check voltages, waveforms and components associated with pins 2, 5, 6, 8, 11, 12 and 15 of U1800. Check voltage at pin 8 of U1800, it should measure 0.28V at mute and 5.6V at Maximum volume. Check for audio at pins 1 and 9 of Audio Power Amp IC (U1900). If there is no audio at pins 1 and 9, check voltages, waveforms and components associated with Hi Fi Buffer Transistors (Q1802 and Q1803). If audio is present at pins 1 and 9 of U1900, check for 14.2V at pins 2, 3 and 8 of U1900. If this voltage is missing, check voltages, waveforms and components associated with Power Amp Mute Transistor (Q1900). If audio is still not present at speakers, check pins 5 and 7 of U1900.

VIDEO

Inject a video signal at JW2503. If video is now present on the screen, refer to "IF-AGC" section of this Troubleshooting guide. If there is no video on CRT, check for a video at pin 1 of Comb Filter IC (U2600). If no video is present, check the voltages, wave- forms and components associated with Video Kill Switch Transistor (Q2602), pins 2, 7, 9, 11, 14 and 15 of Video Switch IC (U6201) Clamp Transistor (Q6201) and Video Buffer Transistor (Q6202). If video is present at pin 1 of U2600, check for a video signal at pin 40 of U2700, check voltages, waveforms and components associated with pins 1, 2, 5, 6 and 7 of U260. Luminance Buffer Transistor (Q2601) and Delay Line DL2700. If video is present at pin 40 of U2700, check for video signals at pins 24, 25 and 26 of U2700. If proper waveforms are not present at pins 24, 25 and 26 of U2700, check voltages, waveforms and components associated with 12, 38 thru 41 of U2700. If proper waveforms are present at pins 24, 25 and 26 of U2700, refer to "Raster" section of this Troubleshooting guide. If brightness is inadequate or cannot be controlled, check voltages and components associated with pin 27 of U2700 and pin 19 of AIU IC (U3300).

VERTICAL

Inject a vertical signal at Pin 11 of U4300. If vertical deflection is now present, check voltages, waveforms and components associated with pins 1, 4, 7 and 11 of Deflection IC (U4300), Sync Amp Transistor (Q2401) and Sync Separator Transistor (Q2402). If vertical deflection is not present, check voltages, waveforms and components associated with Sawtooth Switch Transistor (Q4500), Error Amp Transistor (Q4501) and Vertical Output IC (U4500). Vertical linearity or foldover problems may be caused by vertical feedback and bias circuits, check Capacitor C4504 and Electrolytics C4501, C4503 and C4511.

SYNC

If there is vertical or horizontal sync, check voltages, waveforms and components associated with pins 3, 4, 7, 10 of Deflection IC (U4300) Sync Amp Transistor (Q2401) and Sync Separator Transistor (Q2402). If there is no horizontal sync, check voltages, waveforms and components associated with pins 2, 3, 5, 6, 7, 8 and 10 of U4300 and Ramp Reset Transistor (Q4301). If there is no vertical sync, check voltages, waveforms and components associated with pins 4, 7 and 11 of U4300.

RASTER

Check CRT and CRT voltages. If there is no Red, check voltages, waveforms and components associated with pin 26 of Luma/Chroma IC (U2700), Red Buffer Transistor (Q2905), Red Driver Transistor (Q2901) and Red Output Transistor (Q5001). . If there is no Green, check voltages, waveforms and components associated with pin 25 of U2700, Green Buffer Transistor (Q2906), Green Driver Transistor (Q2902) and Green Output Transistor (Q5002). If there is no Blue, check voltages, waveforms and components associated with pin 24 of U2700, Blue Buffer Transistor (Q2907), Blue Driver Transistor (Q2903) and Blue Output Transistor (Q5003). If raster has a keystone shape, check Deflection Yoke (L4599). If raster has height or width problems, refer to "Vertical", "Horizontal" and "Power Supply" sections of this Troubleshooting guide.

CHROMA

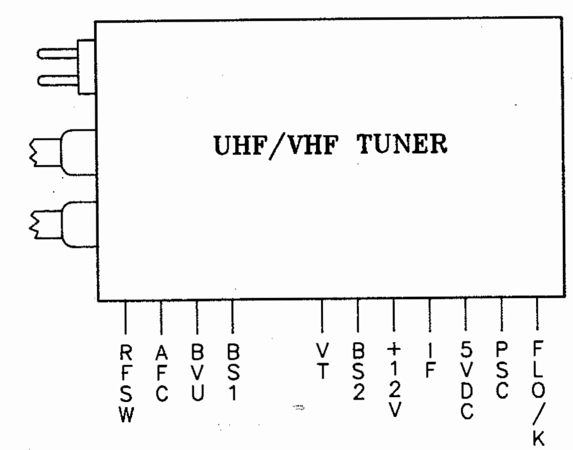
Check for a chroma waveform at pin 3 of Chroma /Luma IC (U2700). If waveform is missing, check voltages, waveforms and components associated with pins 2, 7, 14 and 15 of Video Switch IC (U6201), Video Kill Switch Transistor (Q2602), pins 1, 2, 3, 6 and 8 of U2600 and Chroma Buffer Transistor (Q2800). If a chroma waveform is present at pin 3 of U2700, check for proper chroma waveforms at pins 24, 25 and 26 of U2700. If these waveforms are missing, check voltages, waveforms and components associated with pins 3, 5, 6, 7, 11 thru 14, 16, 18, 19, 20, 24, 25 and 26 of U2700. Check 3.58MHz oscillator at pins 18 thru 20 of U2700. If there is inadequate tint range, check voltages, waveforms and components associated with pin 22 of U2700 and pin 18 of AIU IC (U3300). If proper chroma waveforms are present at pins 24, 25 and 26 refer to "Raster" section of this Troubleshooting guide.

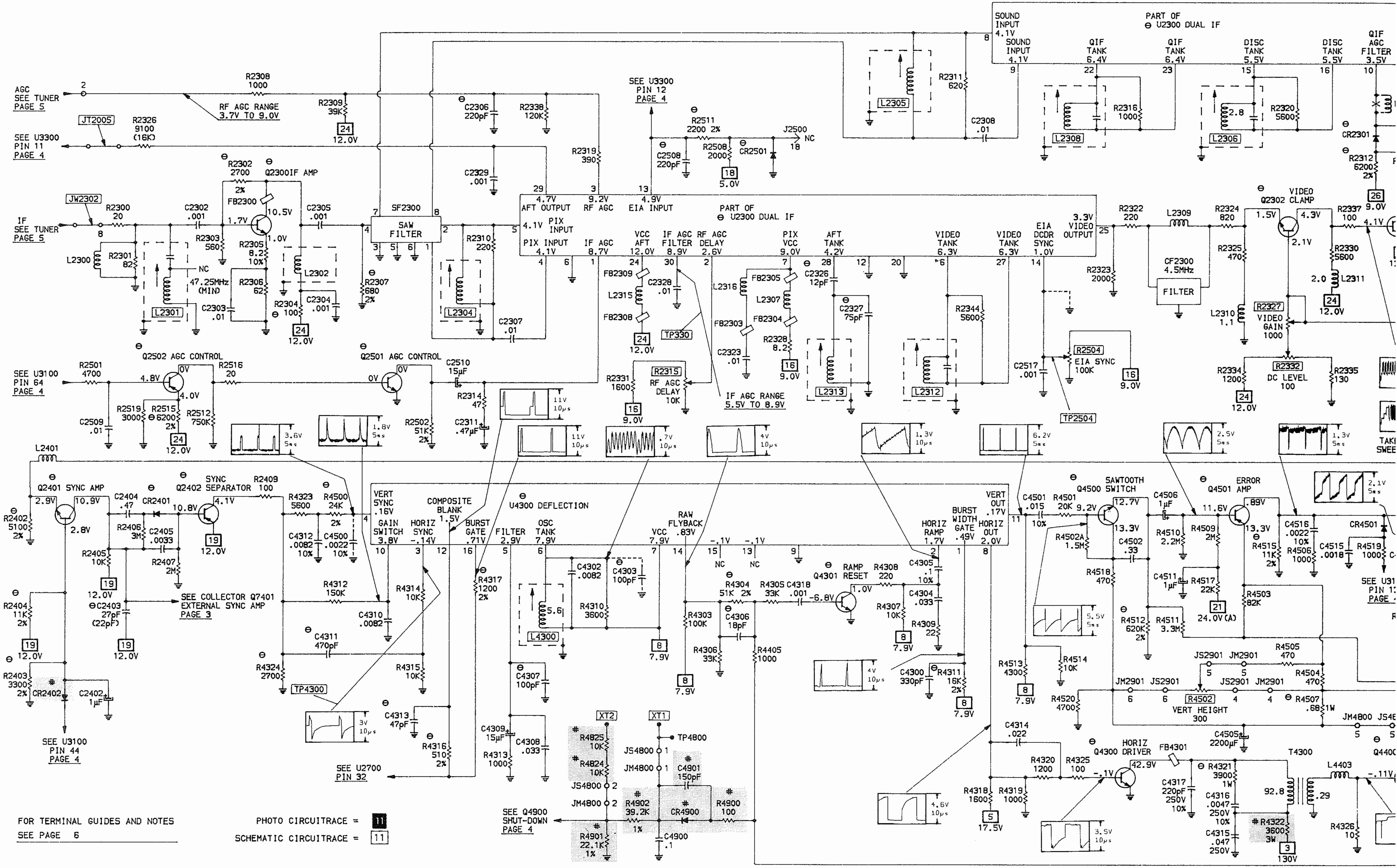
TUNER VOLTAGE CHART

	PSC	OUT	PB	BM	B1	B2	B3	AGC	VT	B4
	1	2	3	4	5	6	7	9	10	11
VHF Low Band	11.8V	9.0V	11.7V	−10.0V	2.5V	−11.4V	12.0V	5.2V	.1V	3.7V
VHF High Band	11.8V	9.0V	11.7V	11.6V	12.3V	−11.4V	12.0V	5.2V	.1V	3.7V
UHF Band	11.8V	9.0V	.2V	11.6V	2.2V	−11.4V	12.0V	5.2V	.1V	3.7V

NOTE: VHF Low Band voltages taken on channel 2.
VHF High Band voltages taken on channel 7.
UHF Band voltages taken on channel 14.

TUNER TERMINAL GUIDE

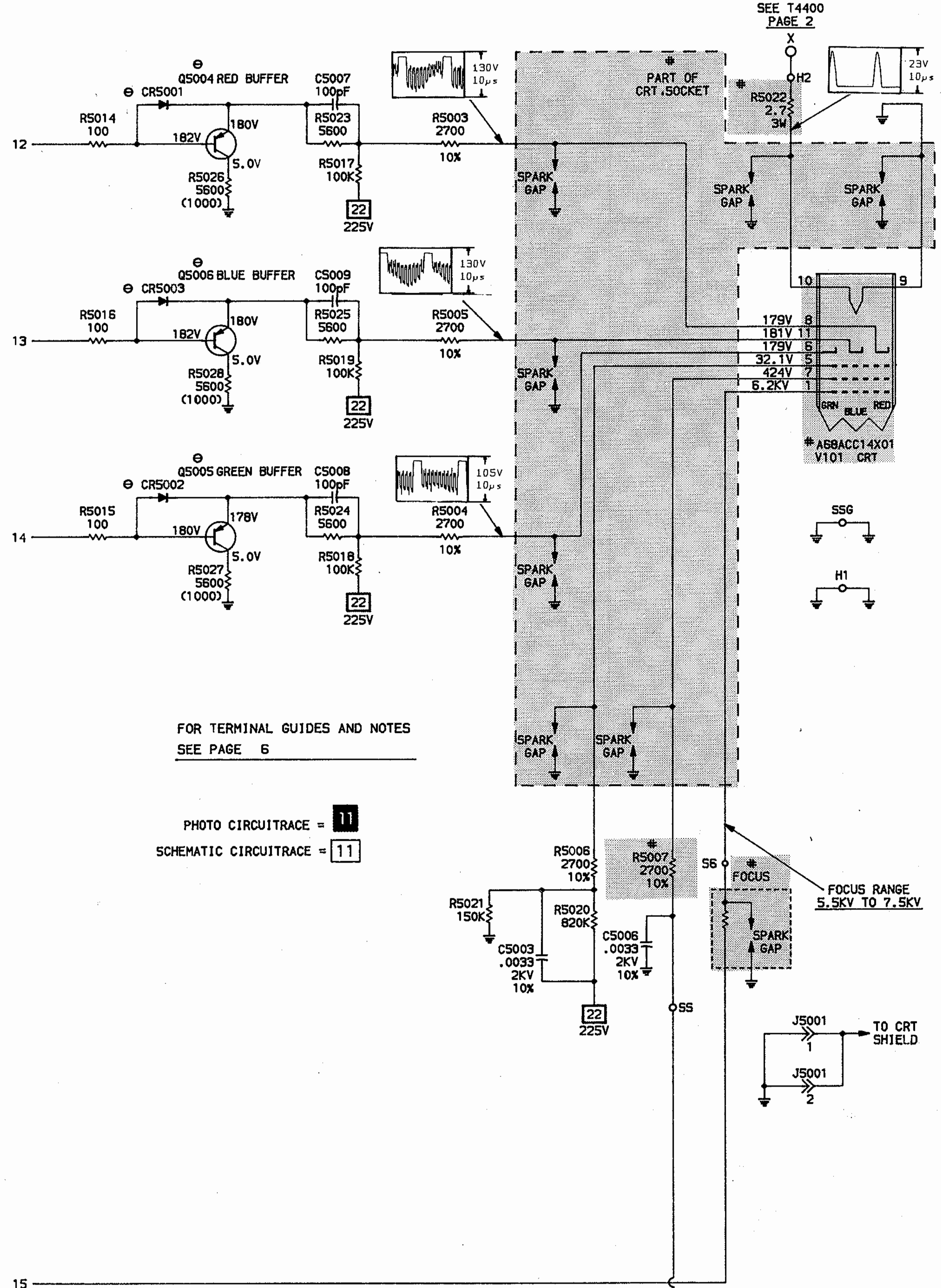




FOR TERMINAL GUIDES AND NOTES
SEE PAGE 6

PHOTO CIRCUITRACE = 11
SCHEMATIC CIRCUITRACE = 11

A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE®



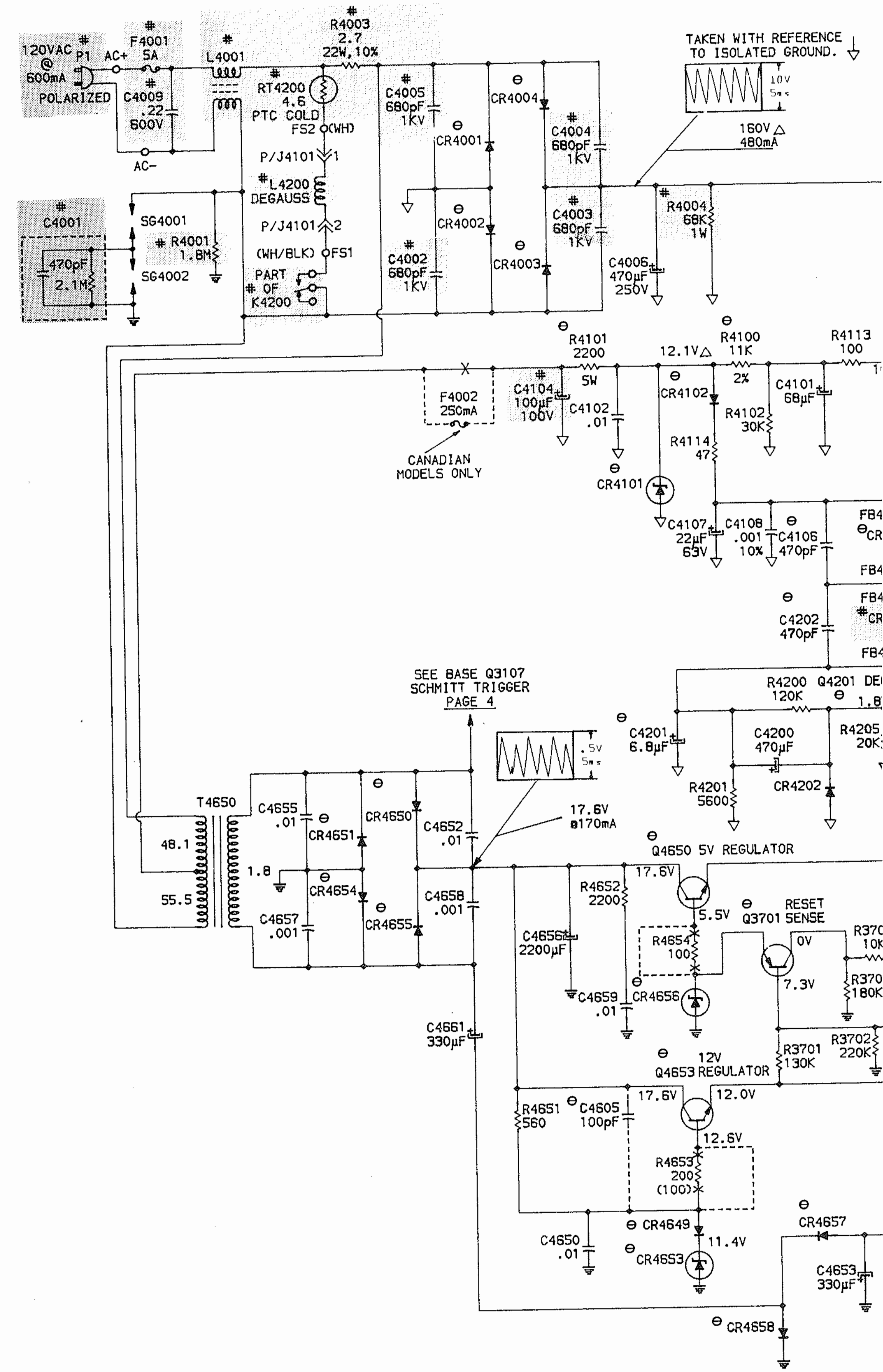
FOR TERMINAL GUIDES AND NOTES SEE PAGE 6

PHOTO CIRCUITRACE = 11

SCHEMATIC CIRCUITRACE = 11

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

CRT



A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

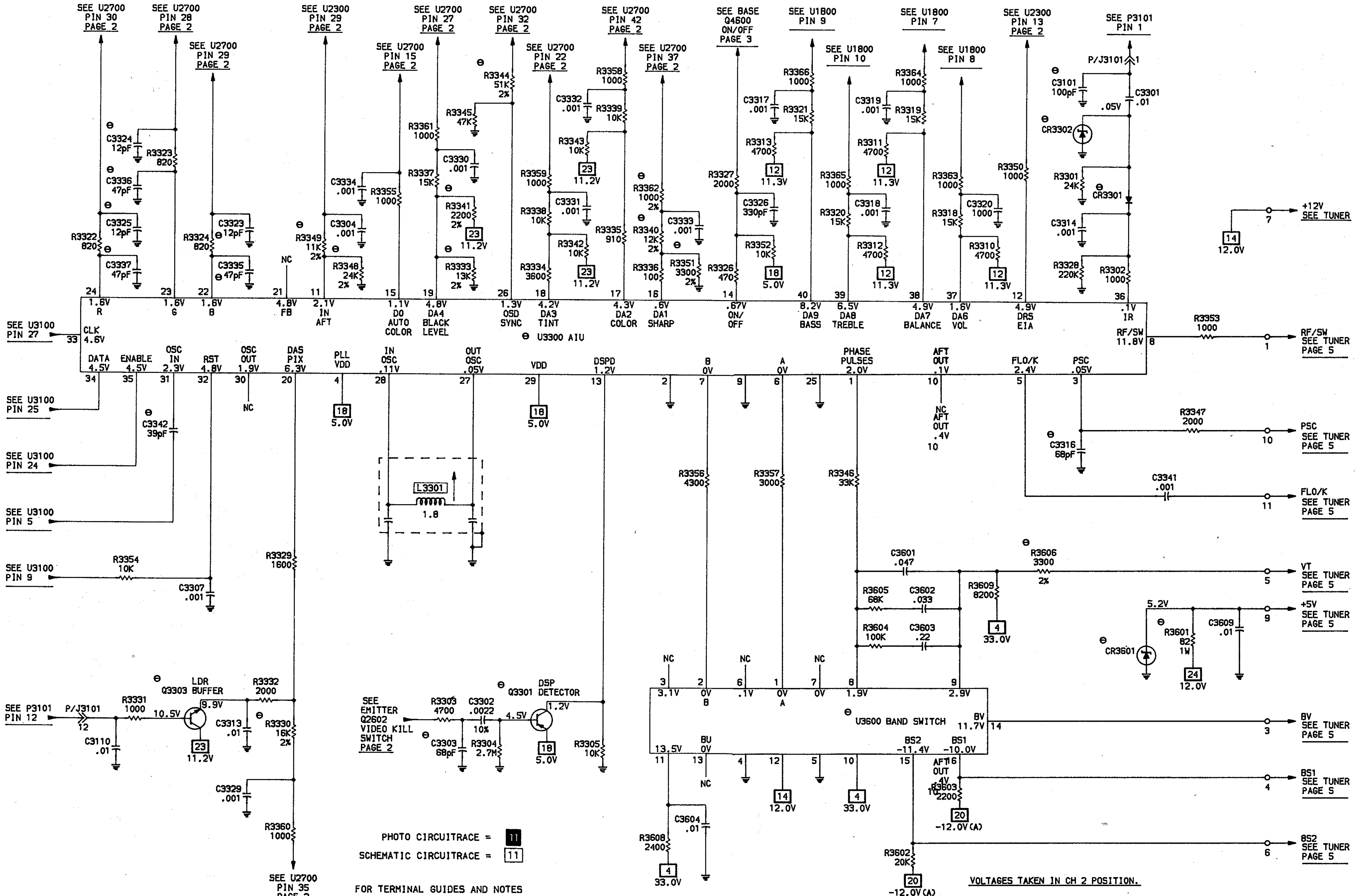


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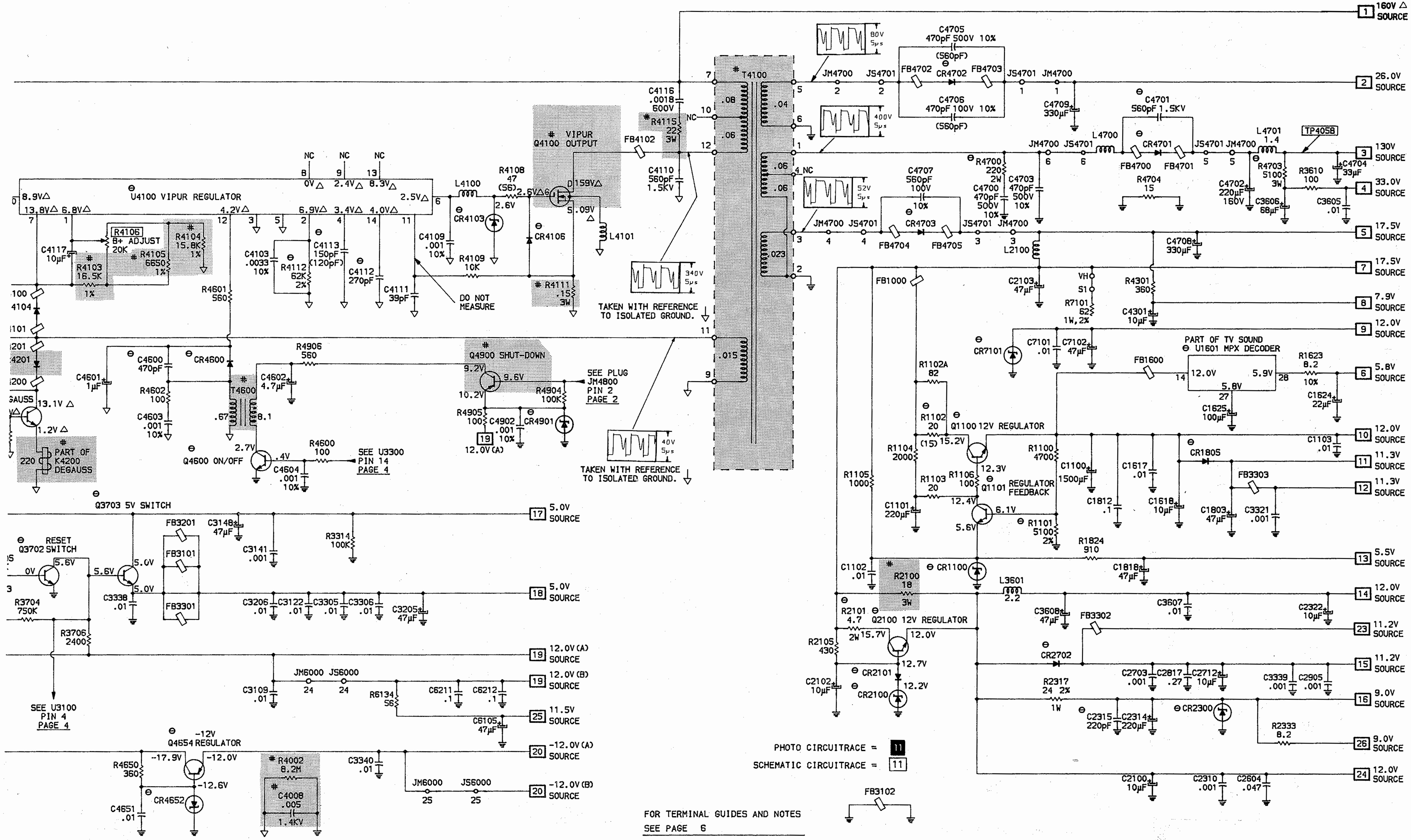
SCHEMATIC CIRCUITRACE = 11

FOR TERMINAL GUIDES AND NOTES SEE PAGE 6

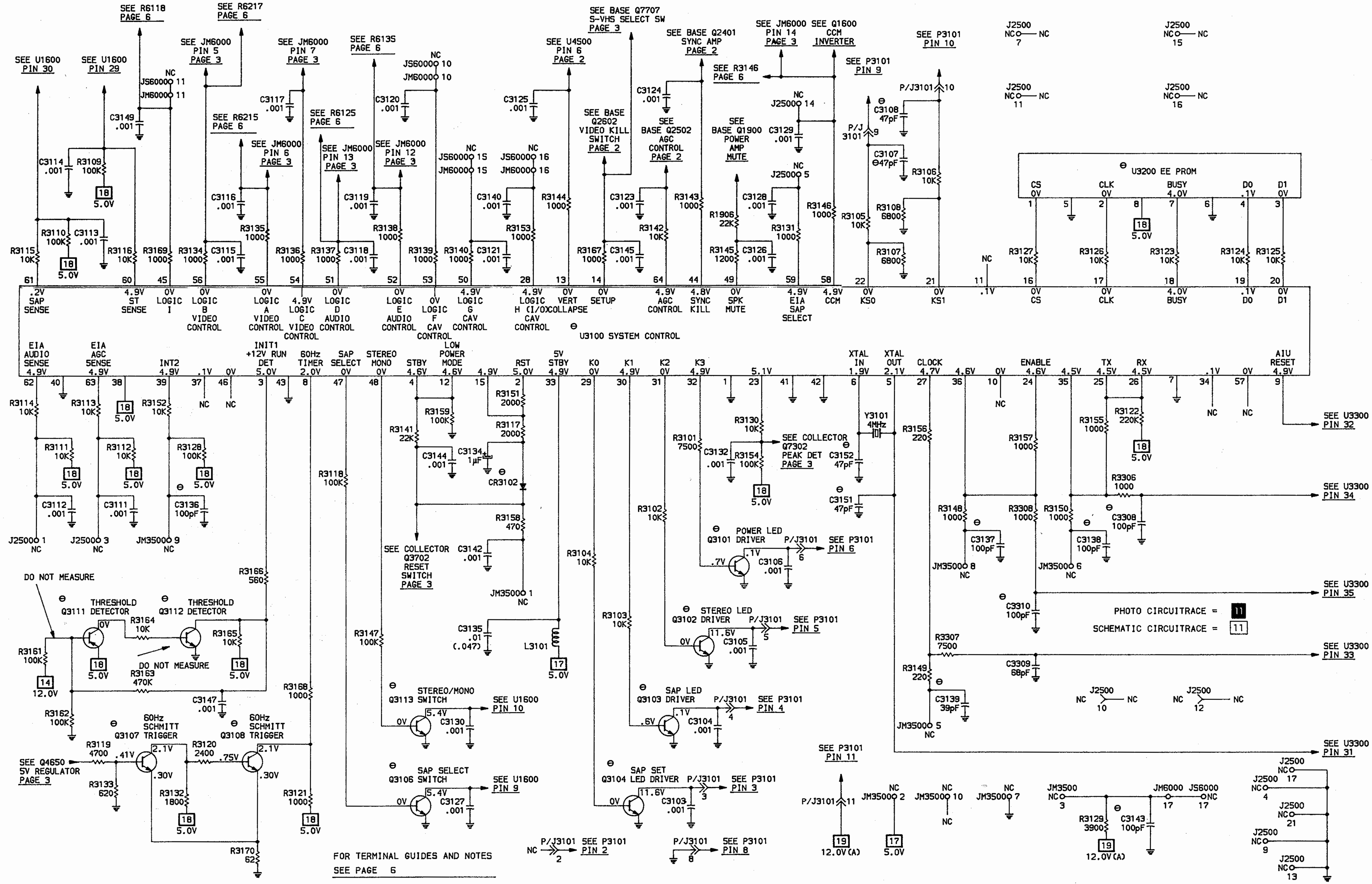
VOLTAGES TAKEN IN CH 2 POSITION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE

TUNER CONTROL

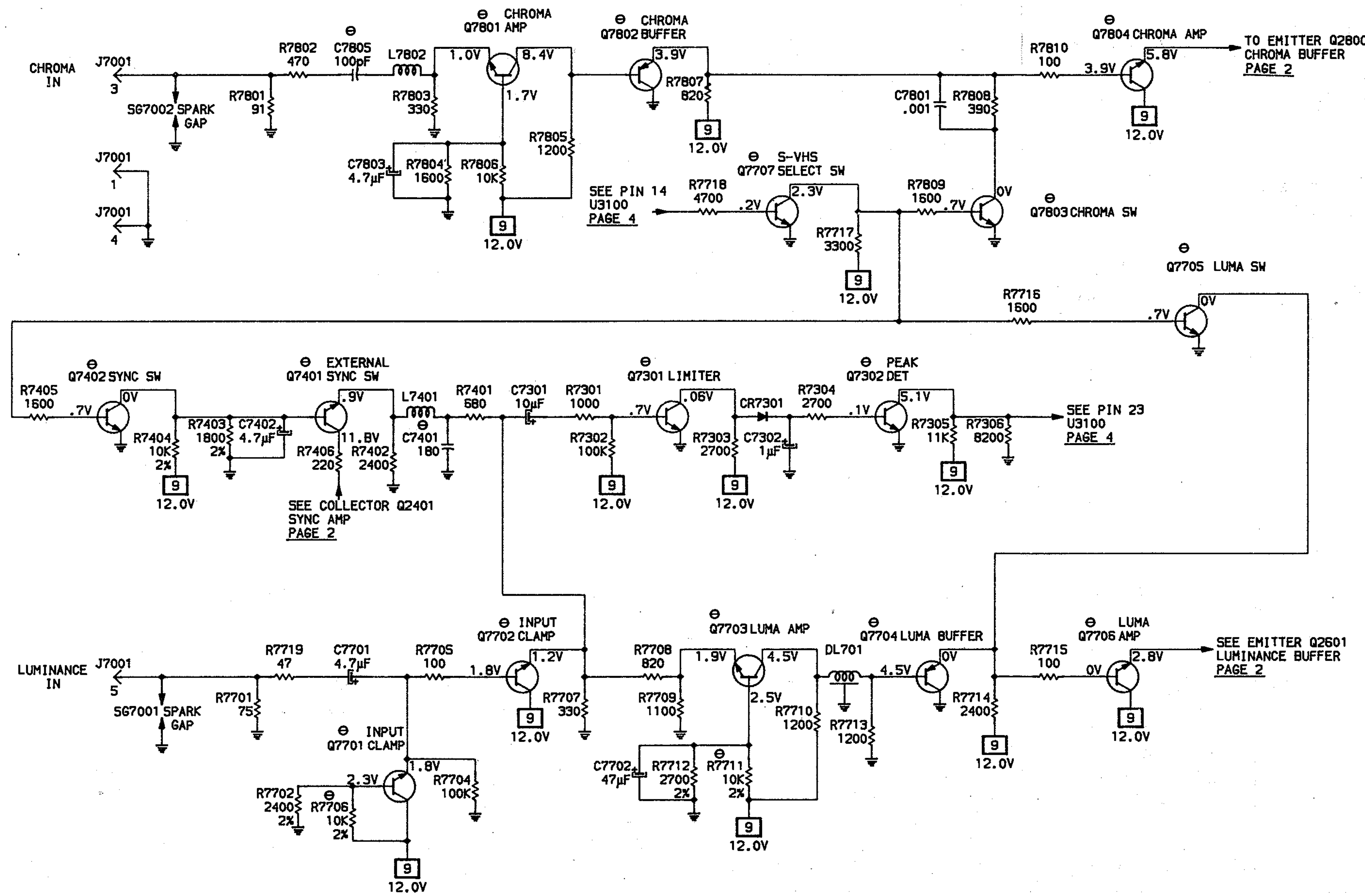


POWER SUPPLY



A PHOTOFACT STANDARD NOTATION SCHEMATIC, WITH CIRCUITRACE®

SYSTEM CONTROL



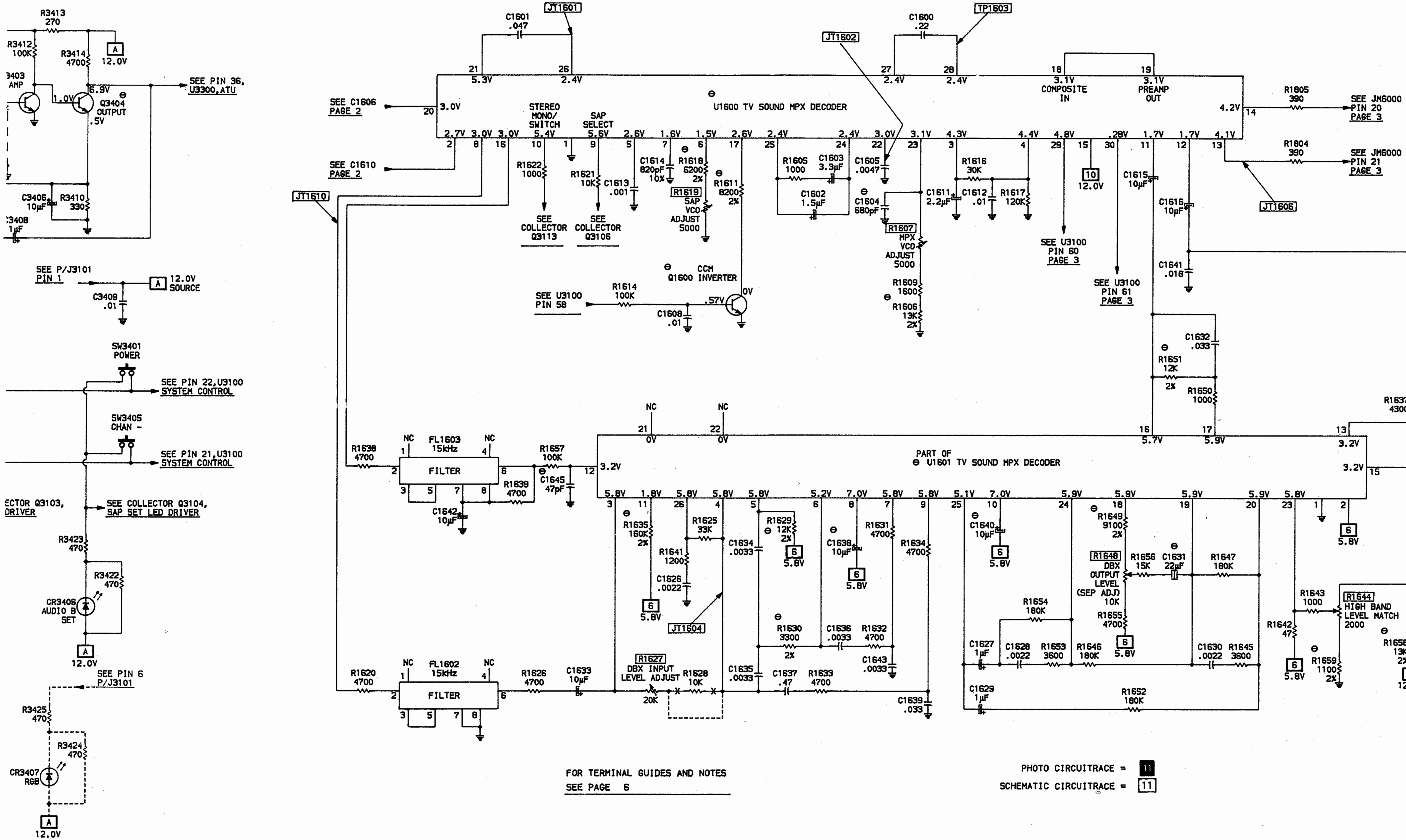
FOR TERMINAL GUIDES AND NOTES
SEE PAGE 6

PHOTO CIRCUITRACE = 11

SCHEMATIC CIRCUITRACE = 11

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

LUMA/CHROMA



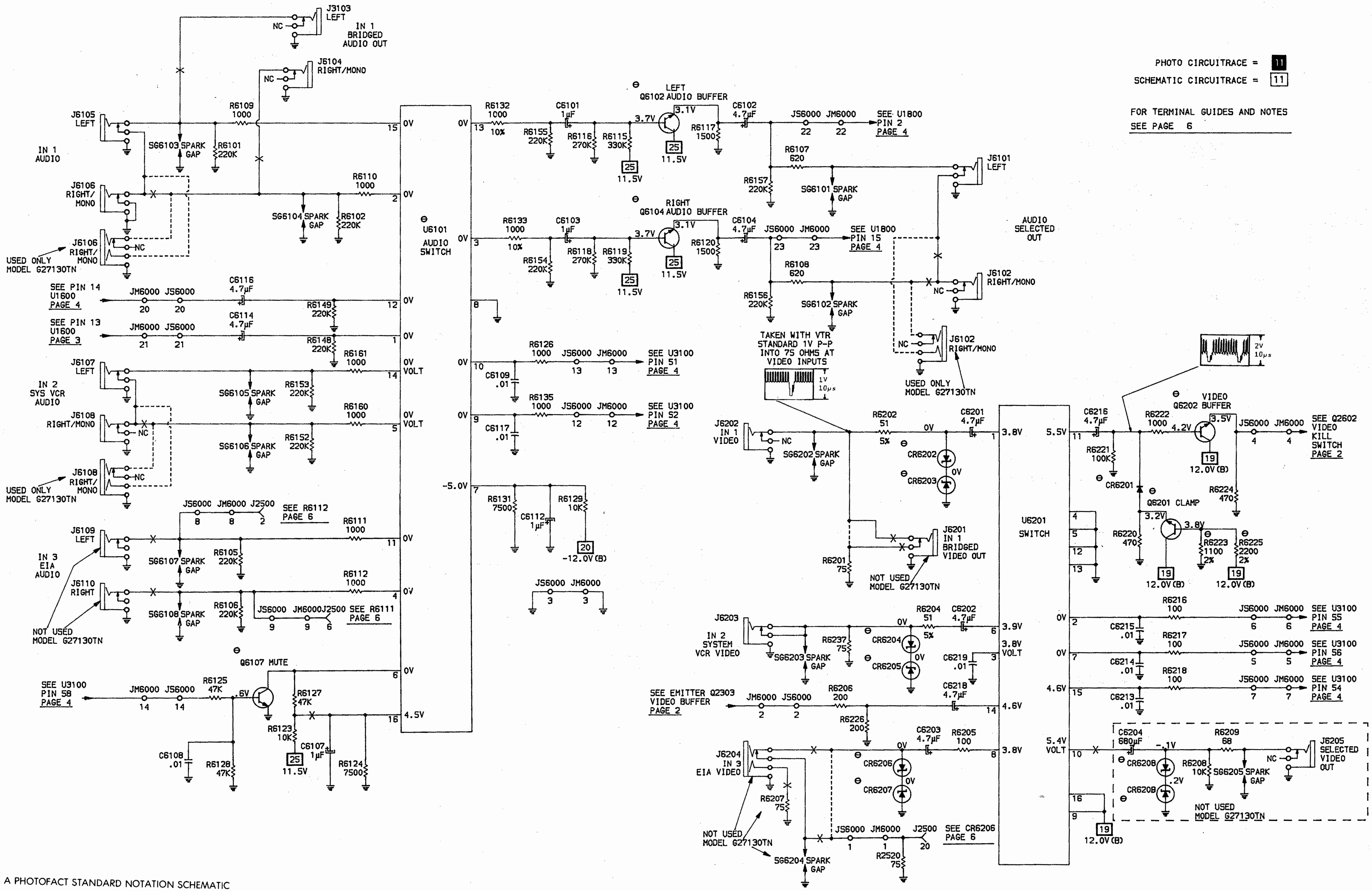
RCA CHASSIS CTC140AJ

PHOTO CIRCUITRACE = 11

SCHEMATIC CIRCUITRACE = 11

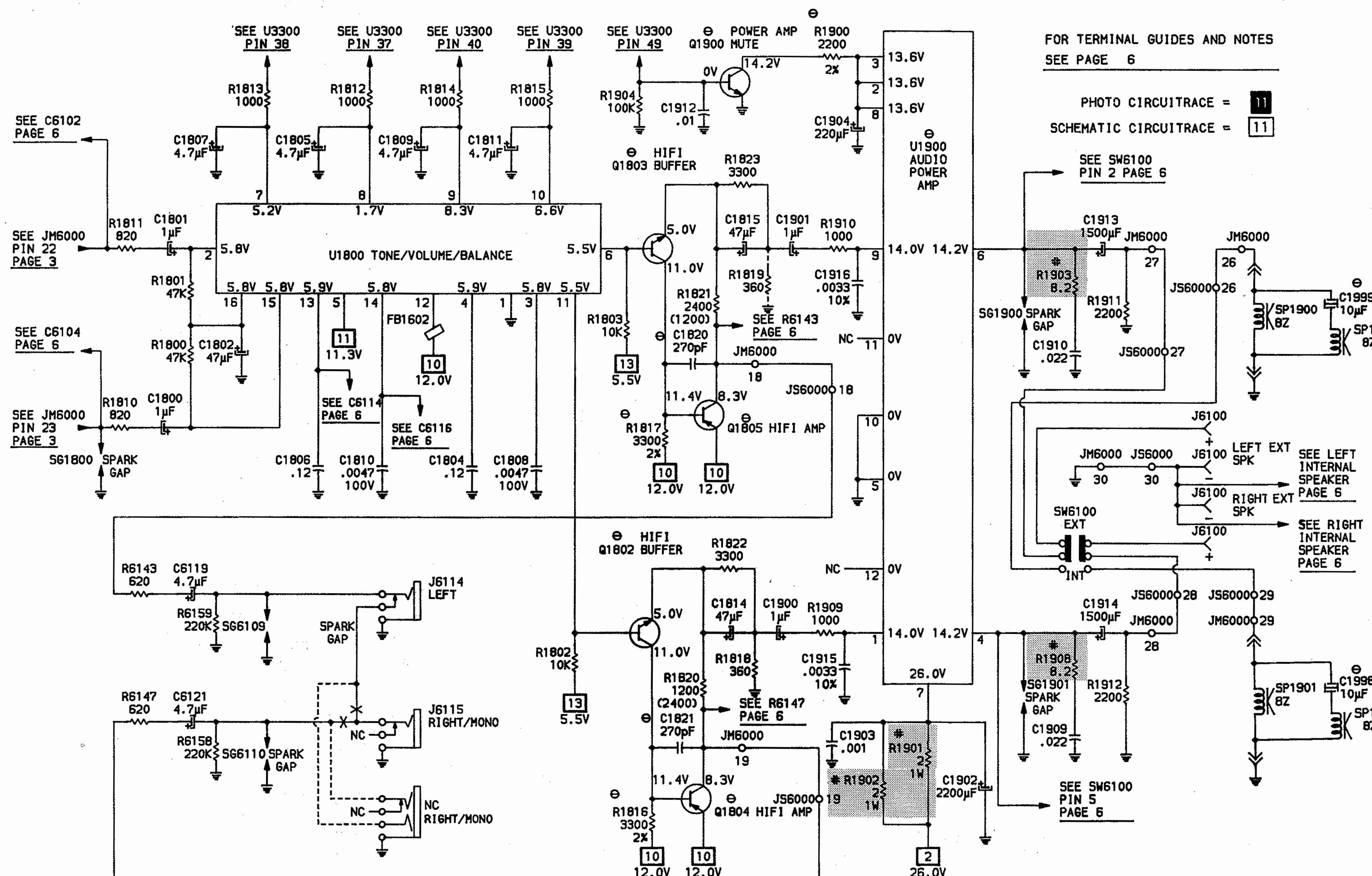
FOR TERMINAL GUIDES AND NOTES SEE PAGE 6

RCA CHASSIS CTC140AJ

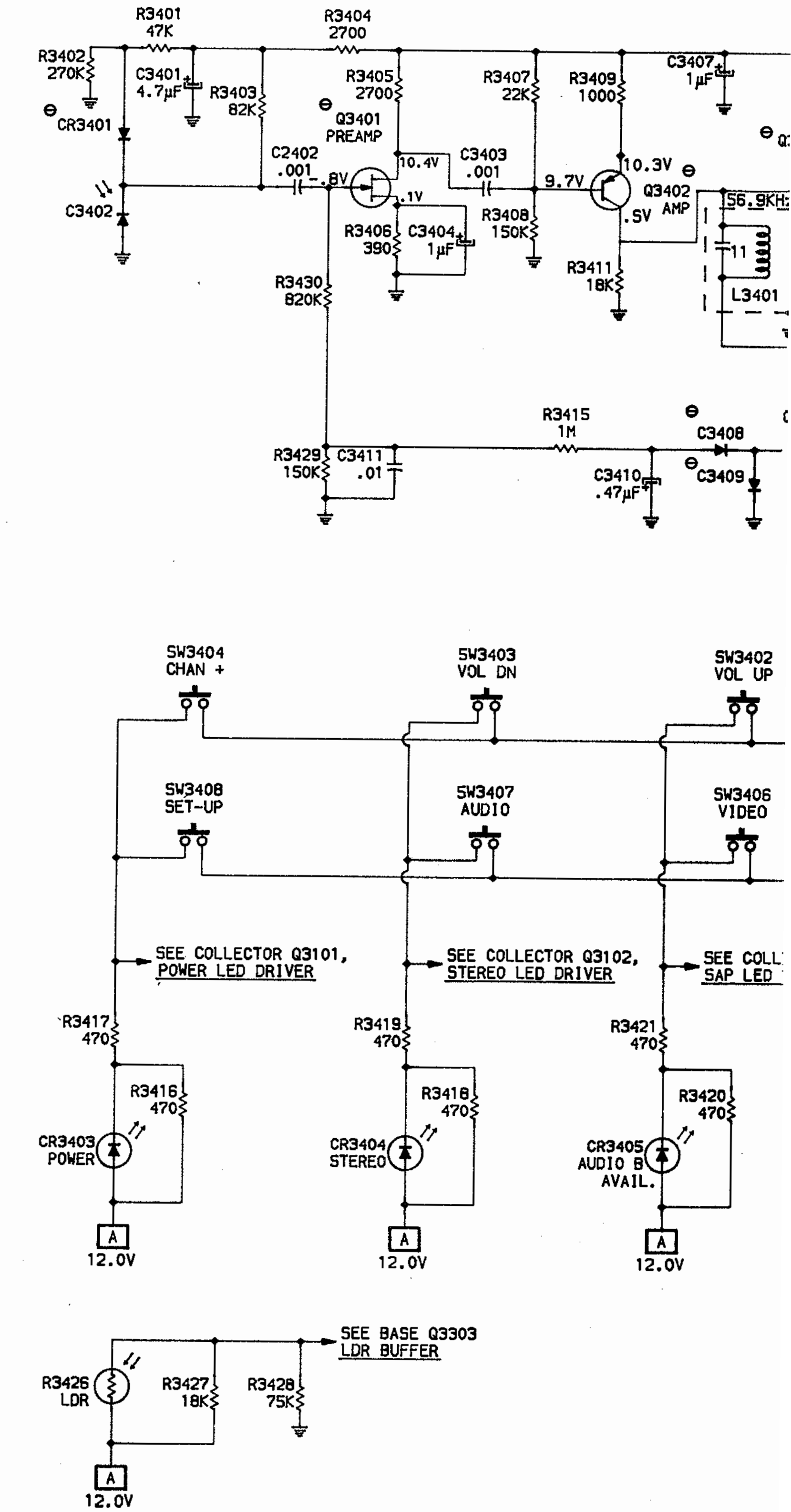


AUDIO/VIDEO

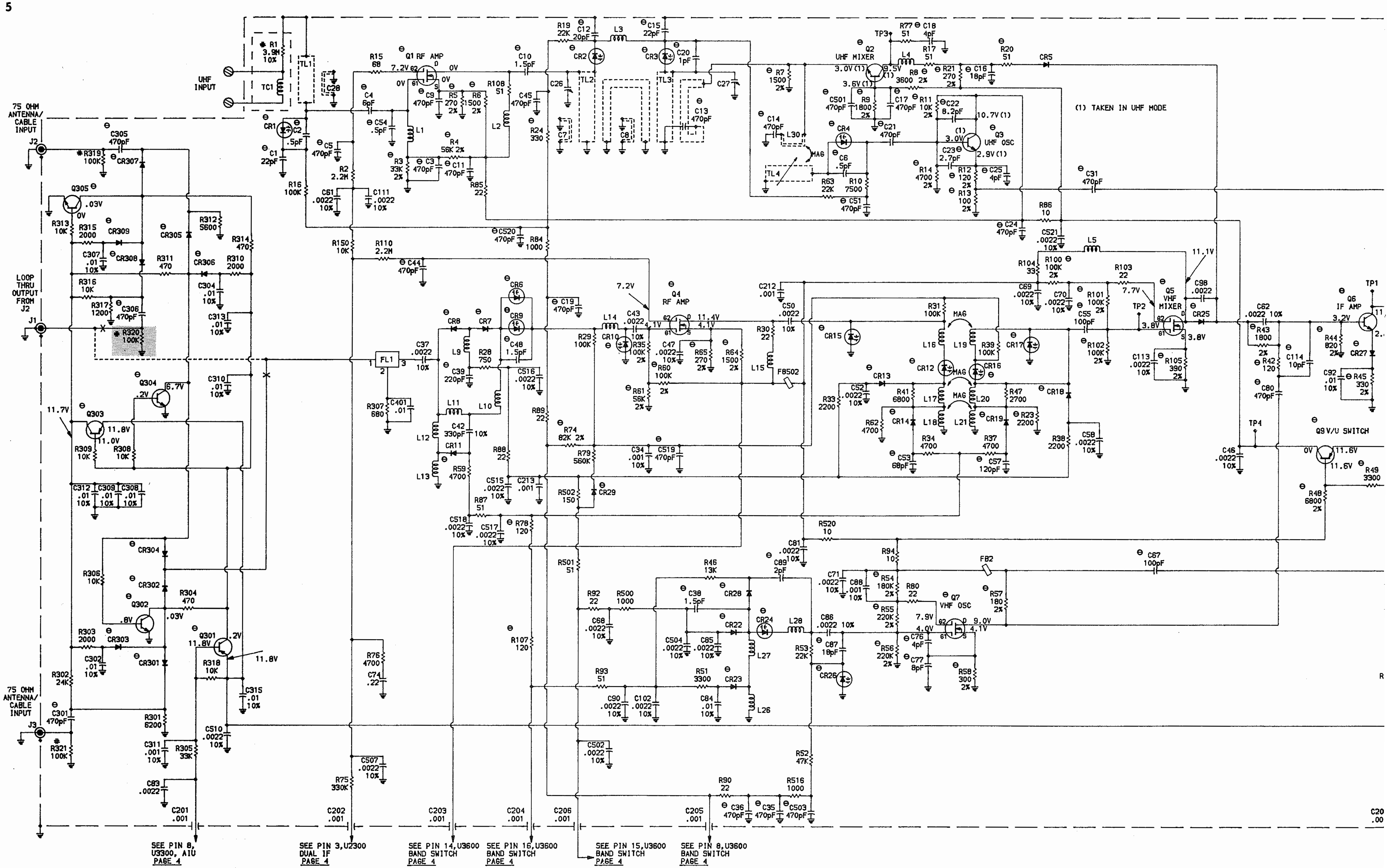
A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE



AUDIO OUT

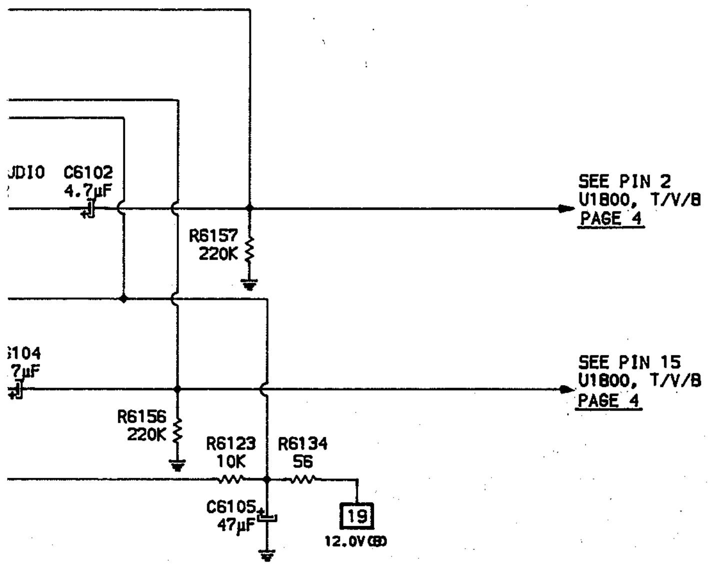


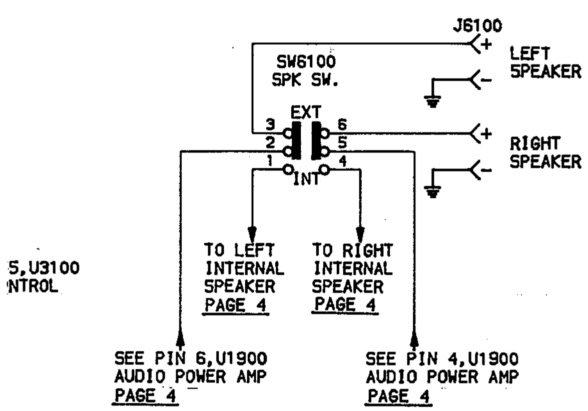
FRONT CONTROL PANEL



A PHOTOFACT STANDARD NOTATION SCHEMATIC

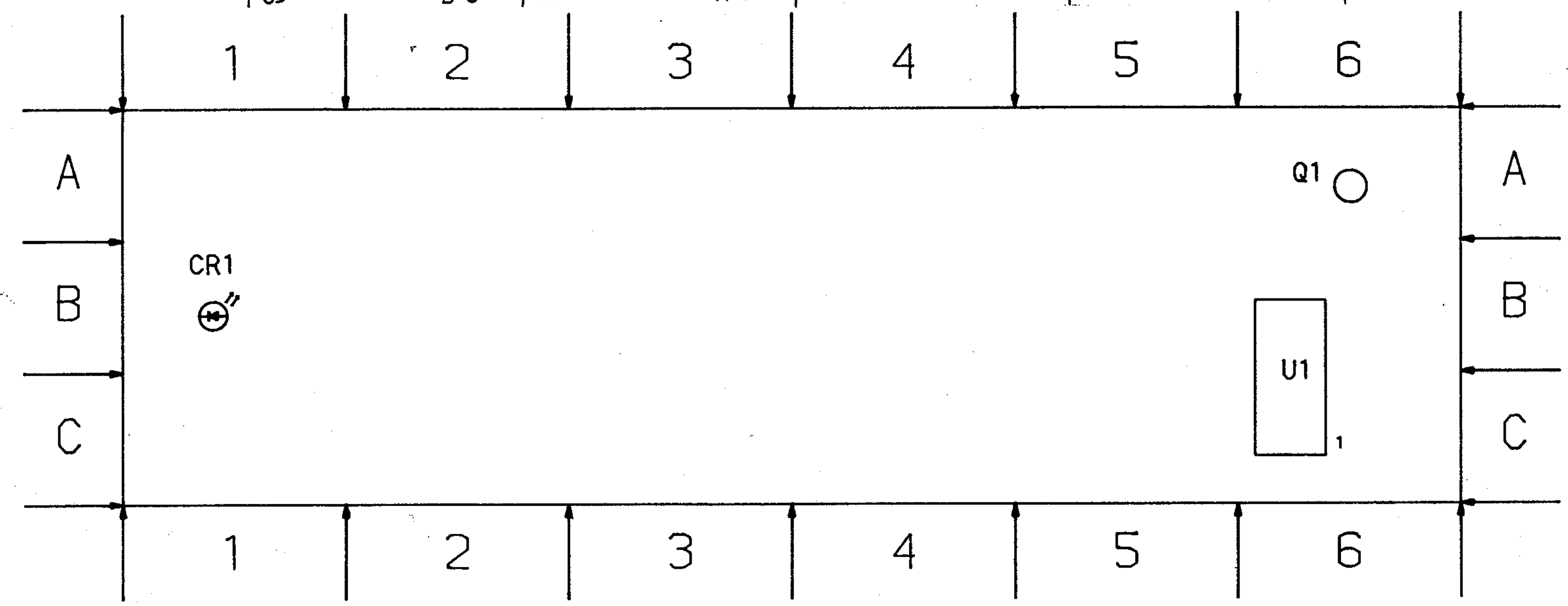
UHF/VHF TUNER ADT-4





CRK50A REMOTE TRANSMITTER-GridTrace LOCATION GUIDE

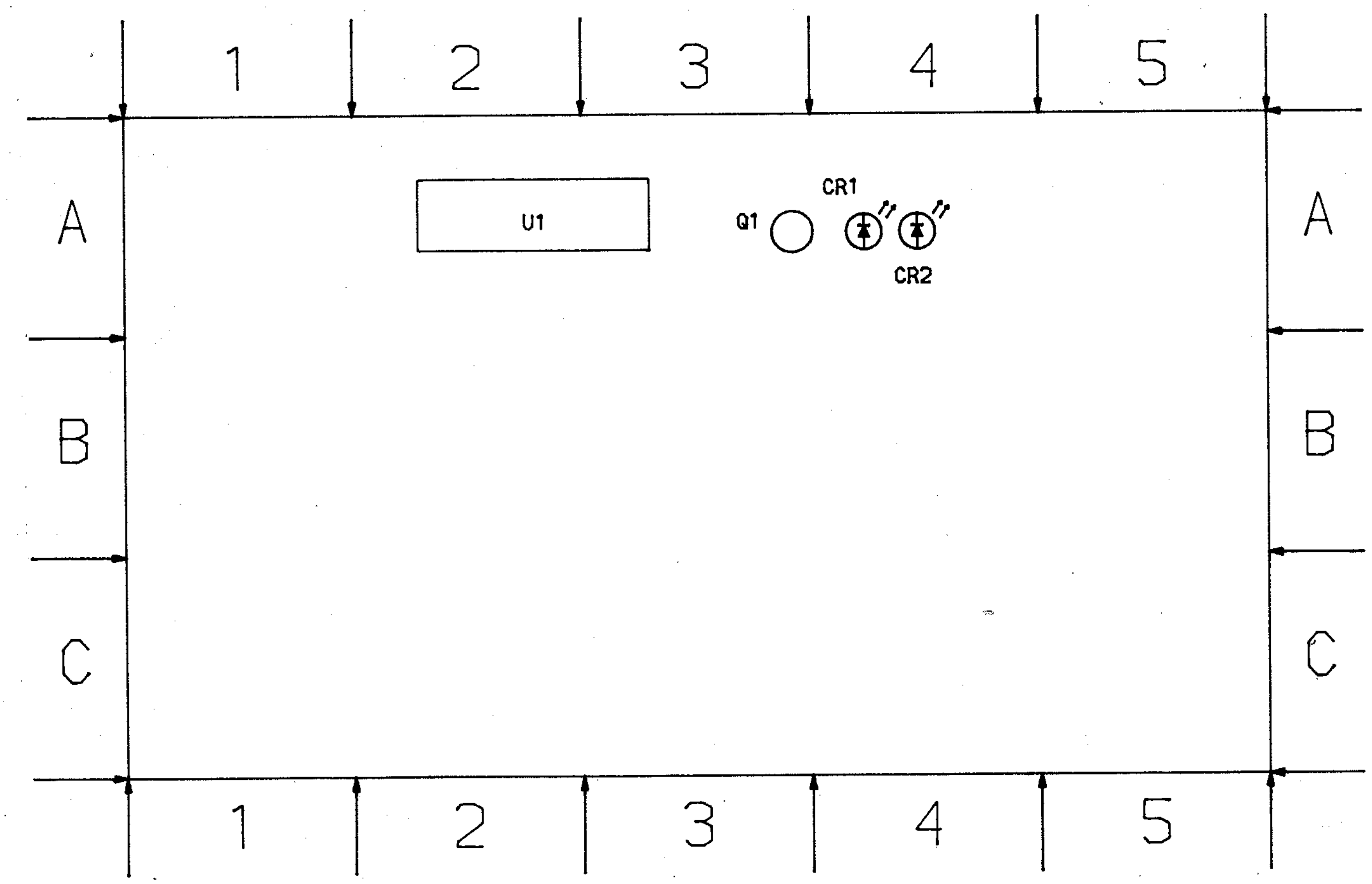
C1	A-5	CR1	B-1	R2	B-6	Y1	B-5
C2	A-5	Q1	A-6	R3	A-1		
C3	B-6	R1	A-6	U1	C-6		



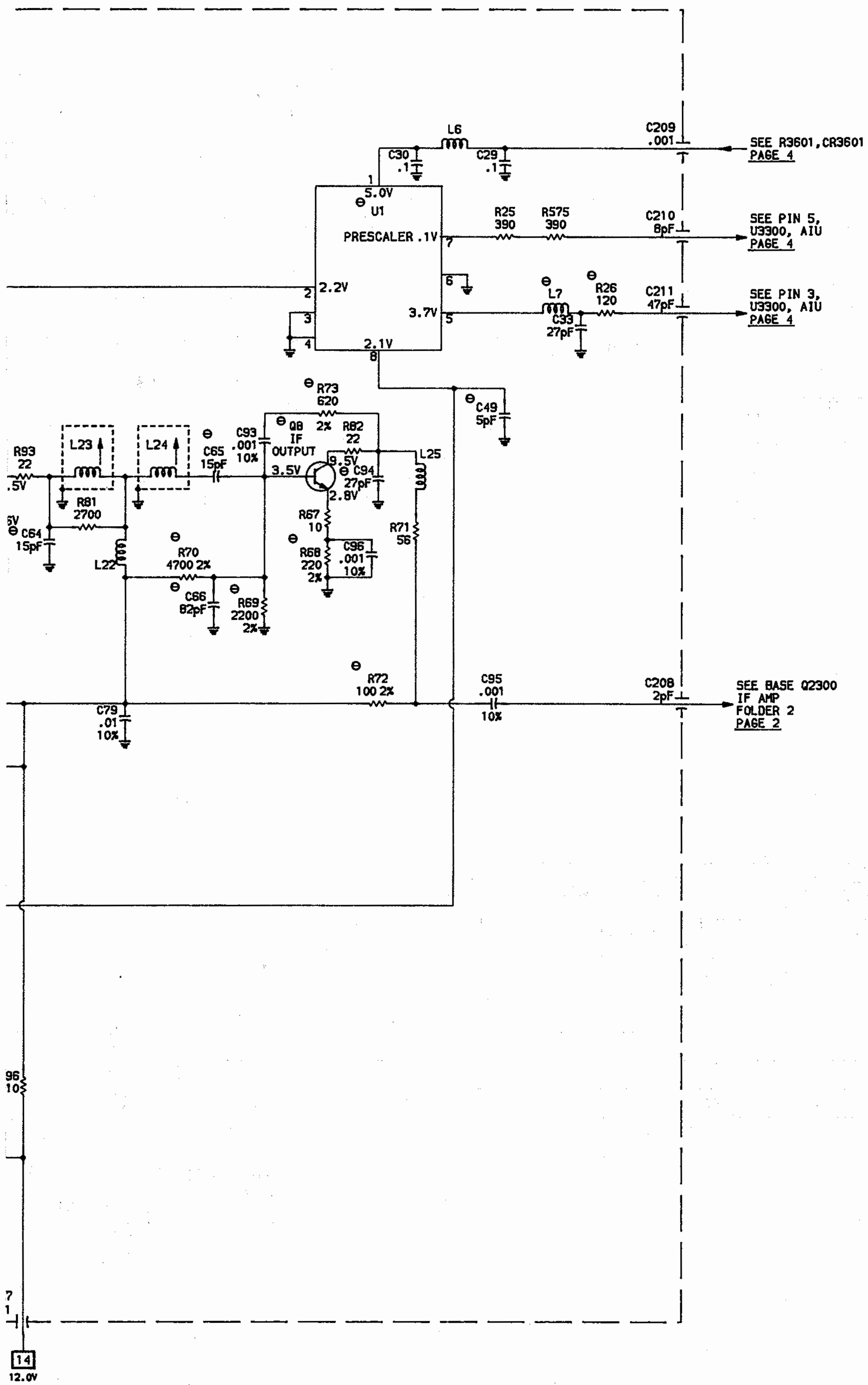
A Howard W. Sams GRIDTRACE™ Photo CRK50A REMOTE TRANSMITTER

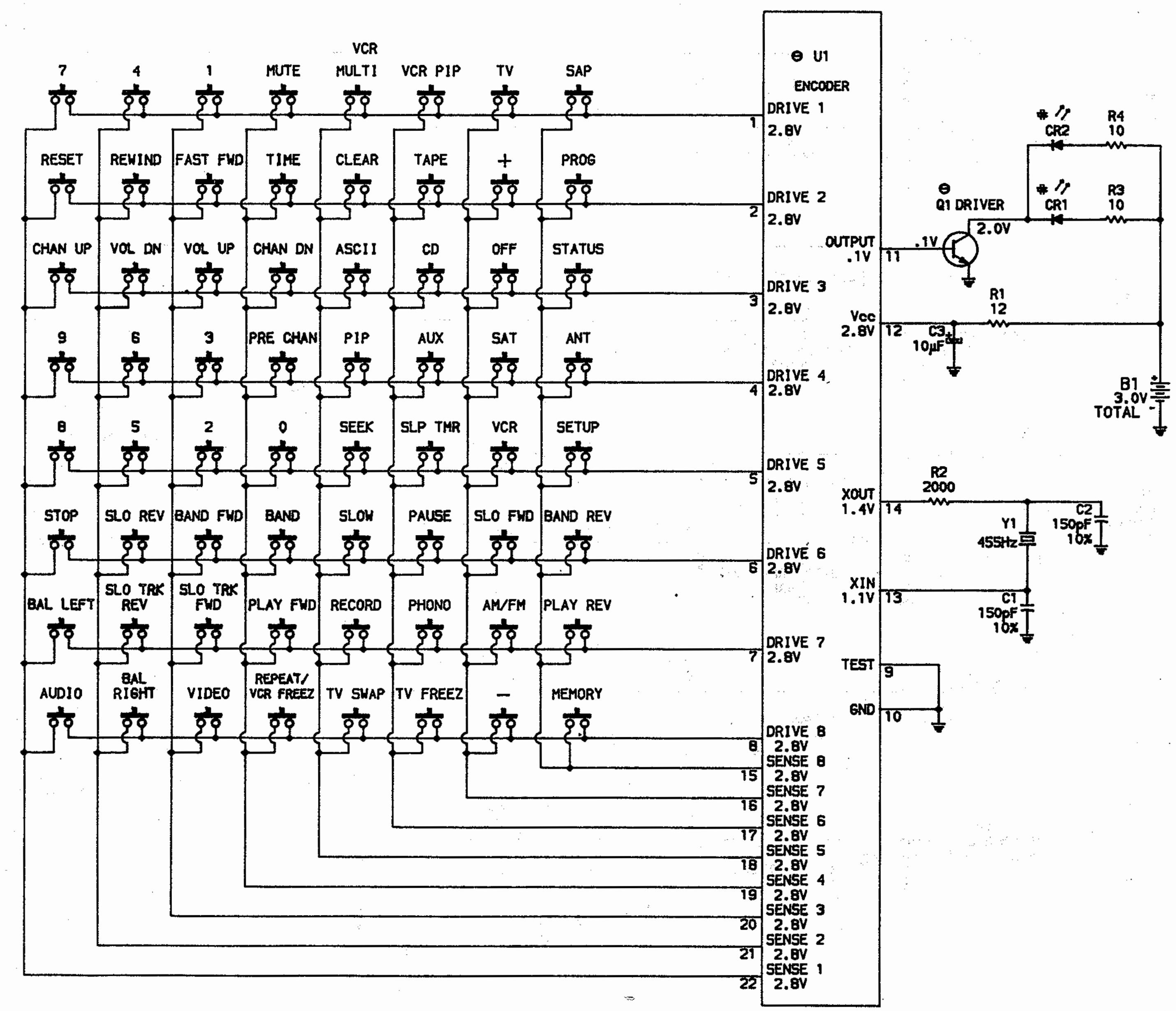
CRK45G REMOTE TRANSMITTER -GridTrace LOCATION GUIDE

C1	A-5
C2	A-5
C3	A-3
CR1	A-4
CR2	A-4
Q1	A-3
R1	A-4
R2	A-3
R3	A-4
R4	A-4
U1	A-2
Y1	A-4

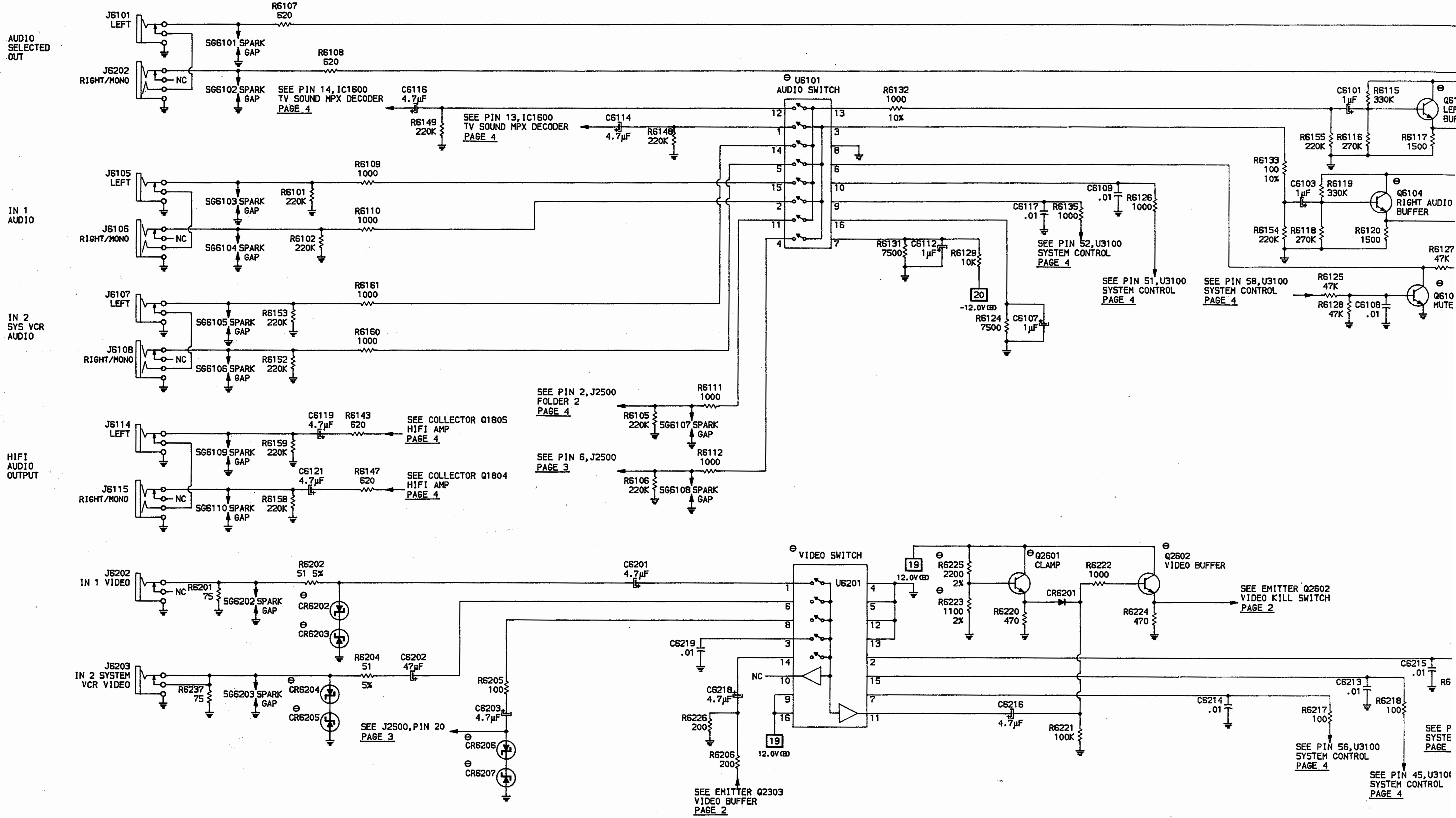


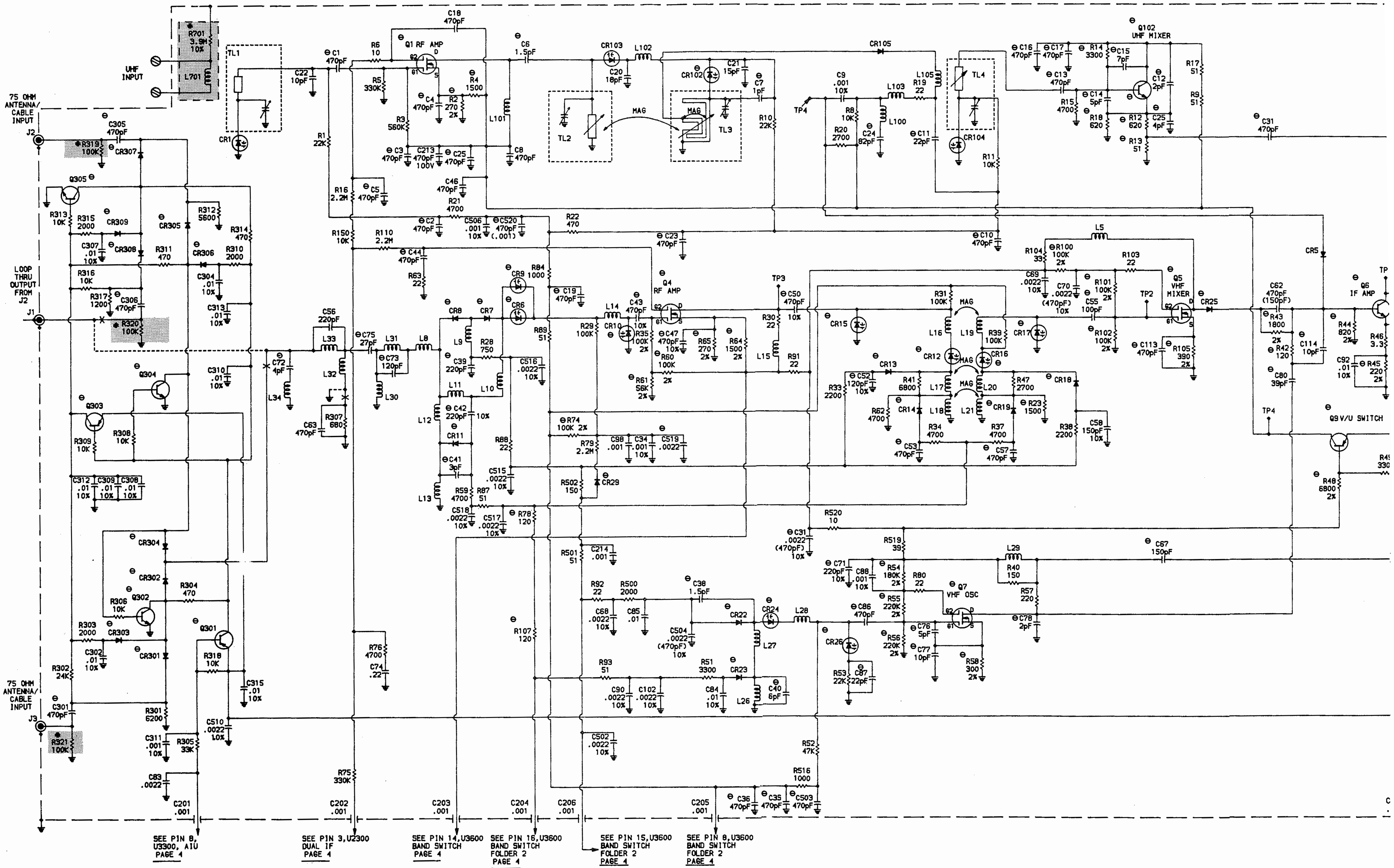
A Howard W. Sams GRIDTRACE™ Photo CRK45G REMOTE TRANSMITTER





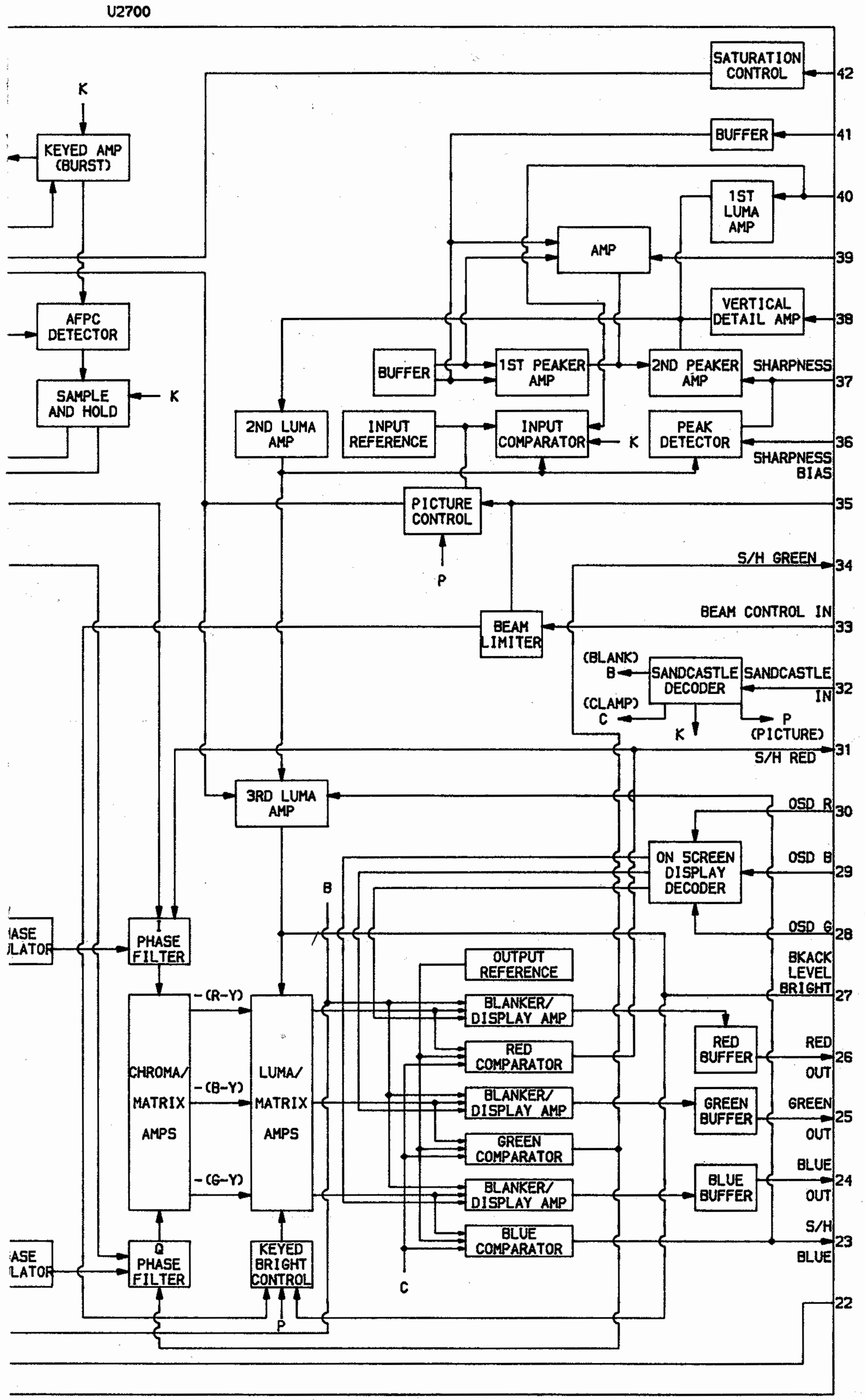
CRK45G REMOTE TRANSMITTER


AUDIO SELECTED OUT
J6101 LEFT
J6202 RIGHT/MONO
R6107 620
R6108 620
SG6101 SPARK GAP
SG6102 SPARK GAP
SEE PIN 14, IC1600 TV SOUND MPX DECODER PAGE 4
C6116 4.7µF
R6149 220K
SEE PIN 13, IC1600 TV SOUND MPX DECODER PAGE 4
C6114 4.7µF
R6148 220K
U6101 AUDIO SWITCH
R6132 1000 10%
IN 1 AUDIO
J6105 LEFT
J6106 RIGHT/MONO
R6109 1000
R6110 1000
R6101 220K
R6102 220K
SG6103 SPARK GAP
SG6104 SPARK GAP
IN 2 SYS VCR AUDIO
J6107 LEFT
J6108 RIGHT/MONO
R6161 1000
R6160 1000
R6153 220K
R6152 220K
SG6105 SPARK GAP
SG6106 SPARK GAP
HIFI AUDIO OUTPUT
J6114 LEFT
J6115 RIGHT/MONO
C6119 4.7µF
R6143 620
SEE COLLECTOR Q1805 HIFI AMP PAGE 4
C6121 4.7µF
R6147 620
SEE COLLECTOR Q1804 HIFI AMP PAGE 4
R6159 220K
R6158 220K
SG6109 SPARK GAP
SG6110 SPARK GAP
SEE PIN 2, J2500 FOLDER 2 PAGE 4
R6111 1000
R6105 220K
SG6107 SPARK GAP
SEE PIN 6, J2500 PAGE 3
R6112 1000
R6106 220K
SG6108 SPARK GAP
R6131 7500
C6112 1µF
R6129 10K
20
-12.0V
R6124 7500
C6107 1µF
C6117 .01
R6135 1000
SEE PIN 52, U3100 SYSTEM CONTROL PAGE 4
C6109 .01
R6126 1000
SEE PIN 51, U3100 SYSTEM CONTROL PAGE 4
SEE PIN 58, U3100 SYSTEM CONTROL PAGE 4
R6133 100 10%
C6101 1µF
R6115 330K
R6155 220K
R6116 270K
R6117 1500
C6103 1µF
R6119 330K
Q6104 RIGHT AUDIO BUFFER
R6154 220K
R6118 270K
R6120 1500
R6127 47K
R6125 47K
R6128 47K
C6108 .01
MUTE
J6202 IN 1 VIDEO
R6201 75
SG6202 SPARK GAP
R6202 51 5%
CR6202
CR6203
C6201 4.7µF
VIDEO SWITCH
U6201
19
12.0V
R6225 2200 2%
R6223 1100 2%
Q2601 CLAMP
R6220 470
CR6201
R6222 1000
Q2602 VIDEO BUFFER
R6224 470
SEE EMITTER Q2602 VIDEO KILL SWITCH PAGE 2
J6203 IN 2 SYSTEM VCR VIDEO
R6237 75
SG6203 SPARK GAP
CR6204
CR6205
R6204 51 5%
C6202 47µF
R6205 100
C6203 4.7µF
SEE J2500, PIN 20 PAGE 3
CR6206
CR6207
C6219 .01
NC
C6218 4.7µF
R6226 200
R6206 200
SEE EMITTER Q2303 VIDEO BUFFER PAGE 2
C6216 4.7µF
R6221 100K
C6214 .01
C6213 .01
C6215 .01
R6217 100
R6218 100
SEE PIN 56, U3100 SYSTEM CONTROL PAGE 4
SEE PIN 45, U3100 SYSTEM CONTROL PAGE 4

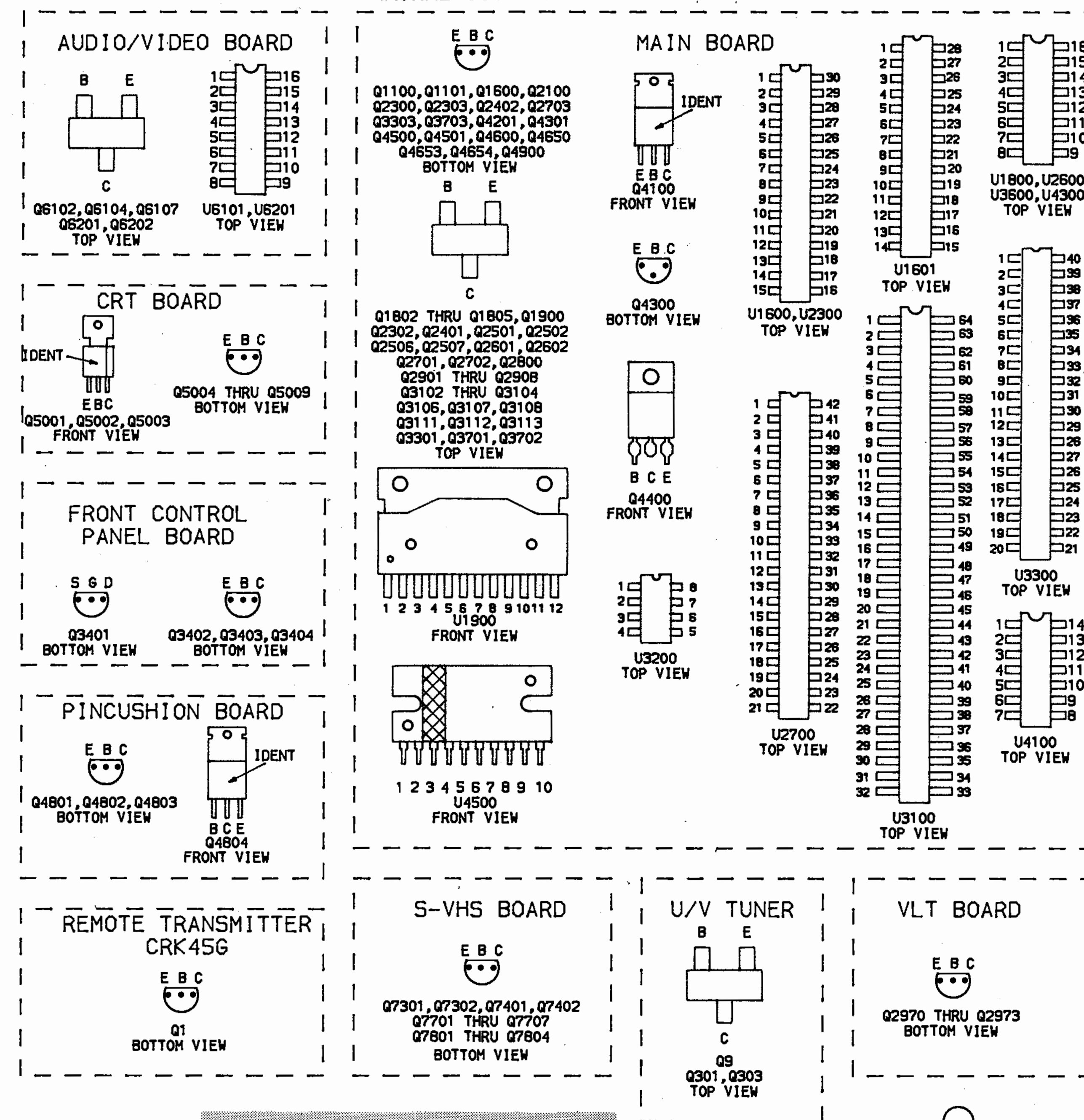


A PHOTOFACT STANDARD NOTATION SCHEMATIC

UHF/VHF TUNER TCCQ-1A



TERMINAL GUIDES AND NOTES

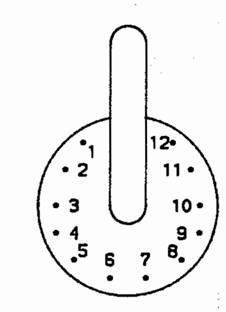


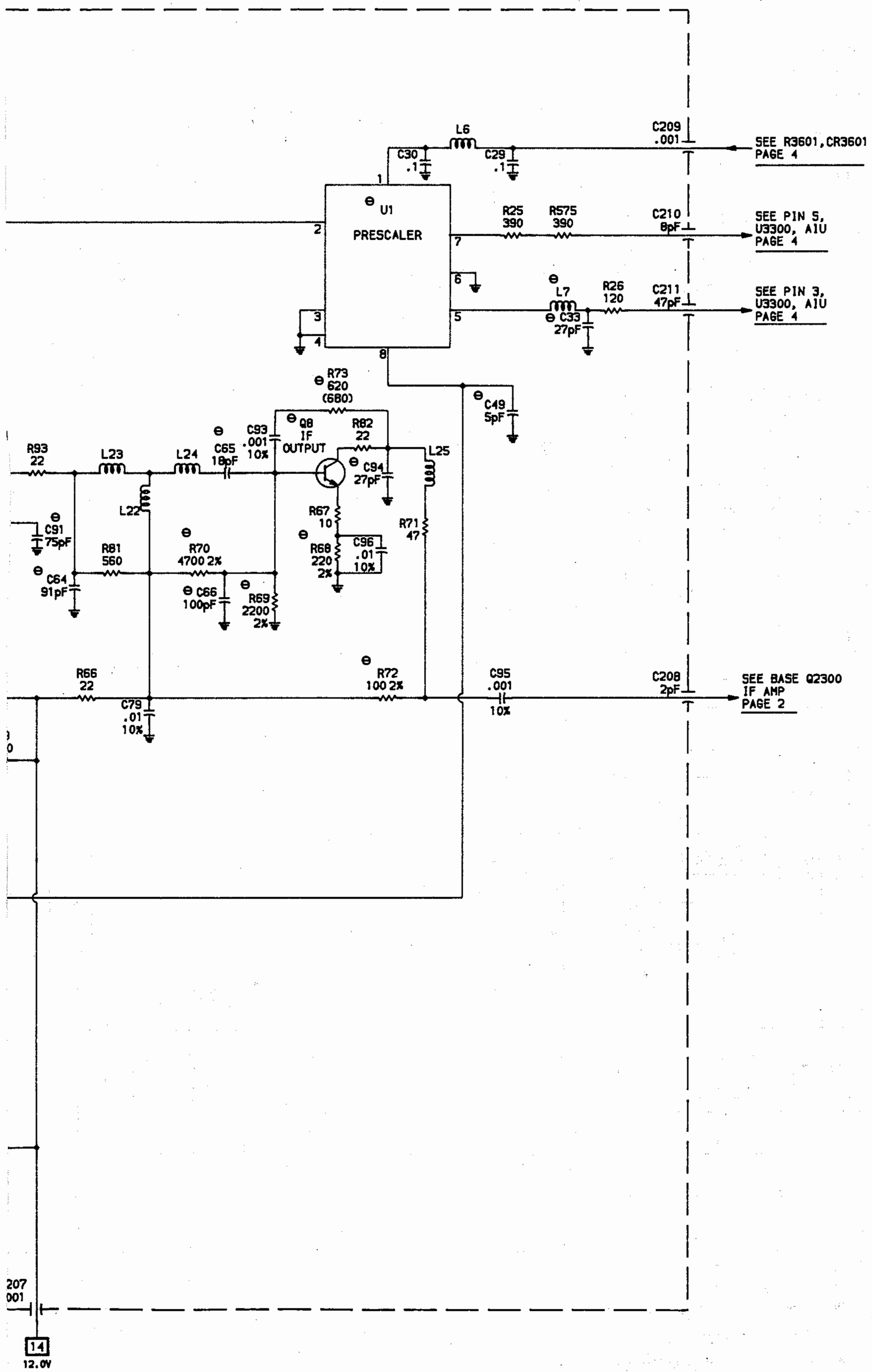
RCA CHASSIS CTC140AJ

For SAFETY use only equivalent replacement part, see parts list.

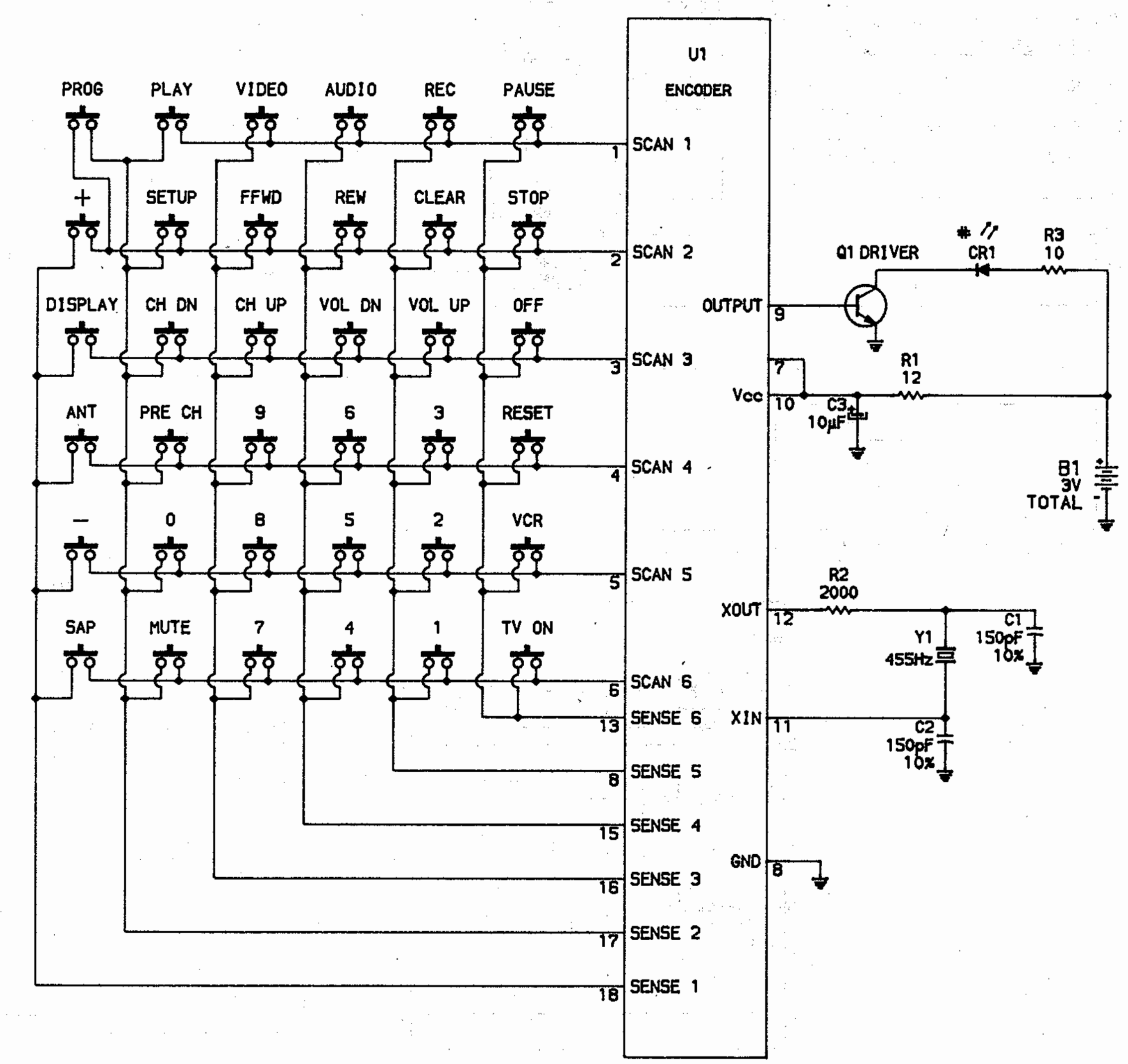
- —✱— Circuitry not used in some versions
- - - - Circuitry used in some versions
- ⊖ See parts list
- ※ Nominal value
- ⏚ Ground
- Chassis
- ▽ Common tie point

Waveforms and voltages are taken from ground, unless noted otherwise.
Waveforms: triggered scope, keyed rainbow generator.
Item numbers in rectangles appear in the alignment/adjustment instructions.
Supply voltages maintained as shown at input.
Voltages measured with digital meter, no signal.
Controls adjusted for normal operation.
Terminal identification may not be found on unit.
Capacitors are 50 volts or less, 5% unless noted.
Electrolytic capacitors are 50 volts or less, 20% unless noted.
Resistors are ½W or less, 5% unless noted.
Value in ( ) used in some versions.
Measurements with switching as shown, unless noted.





KEYS NOT USED ON CRK49
PLAY
FAST FWD
REWIND
REC
PAUSE
VCR
PROG
STOP
DISPLAY
ANT

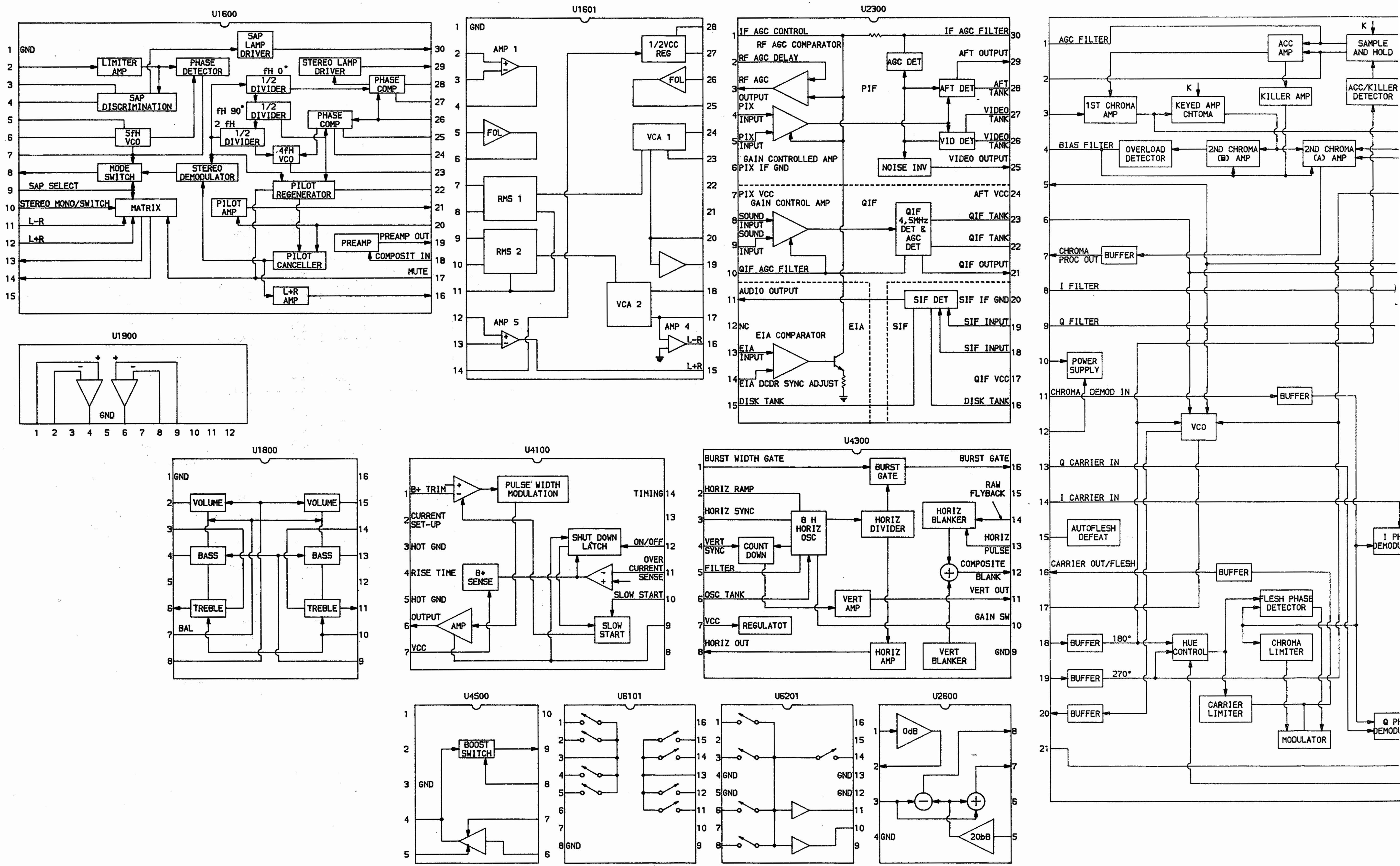


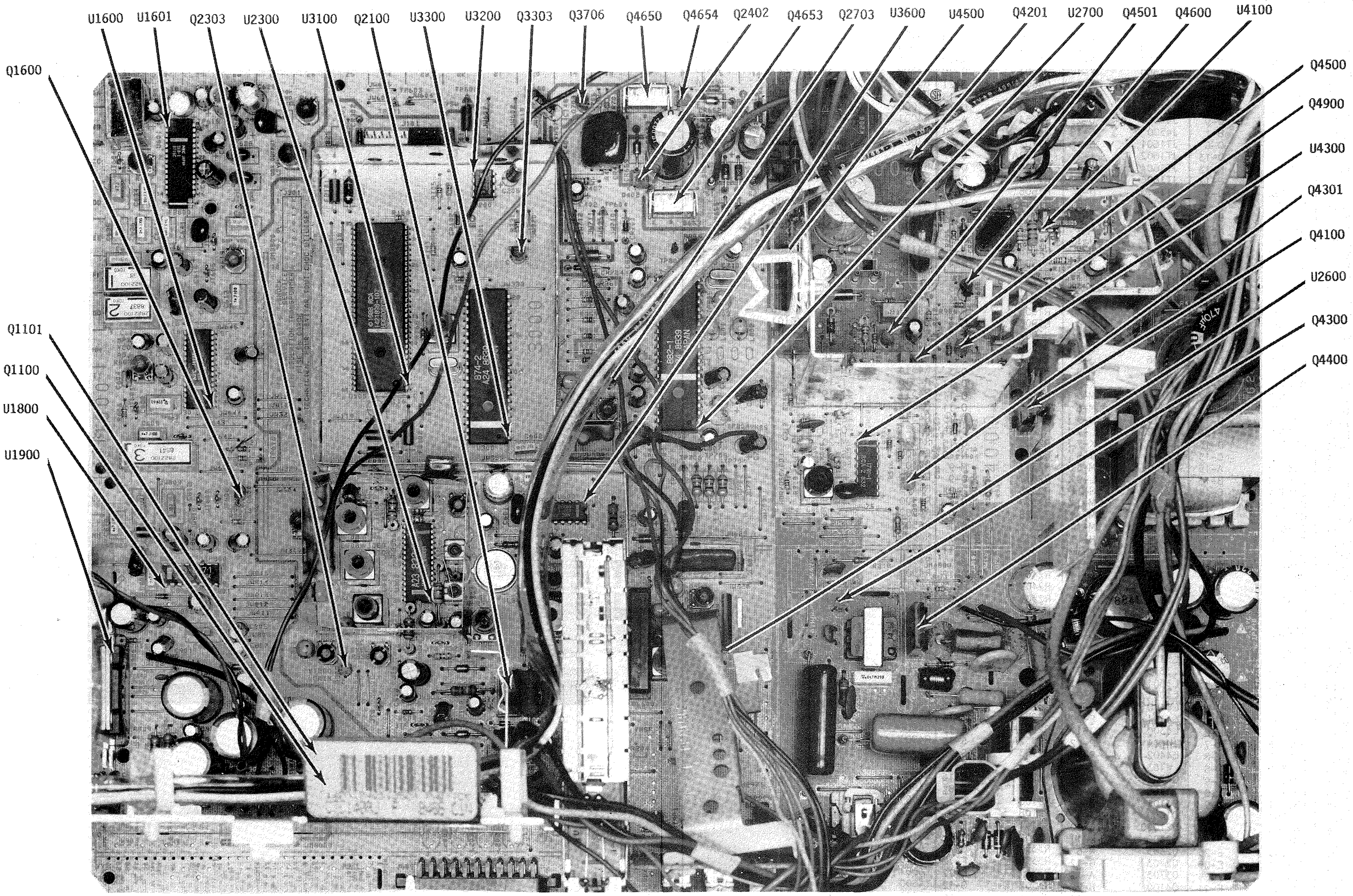
RCA CHASSIS CTC140AJ

A PHOTOFACT STANDARD NOTATION SCHEMATIC

CRK50A REMOTE TRANSMITTER

SET 2709 FOLDER 1

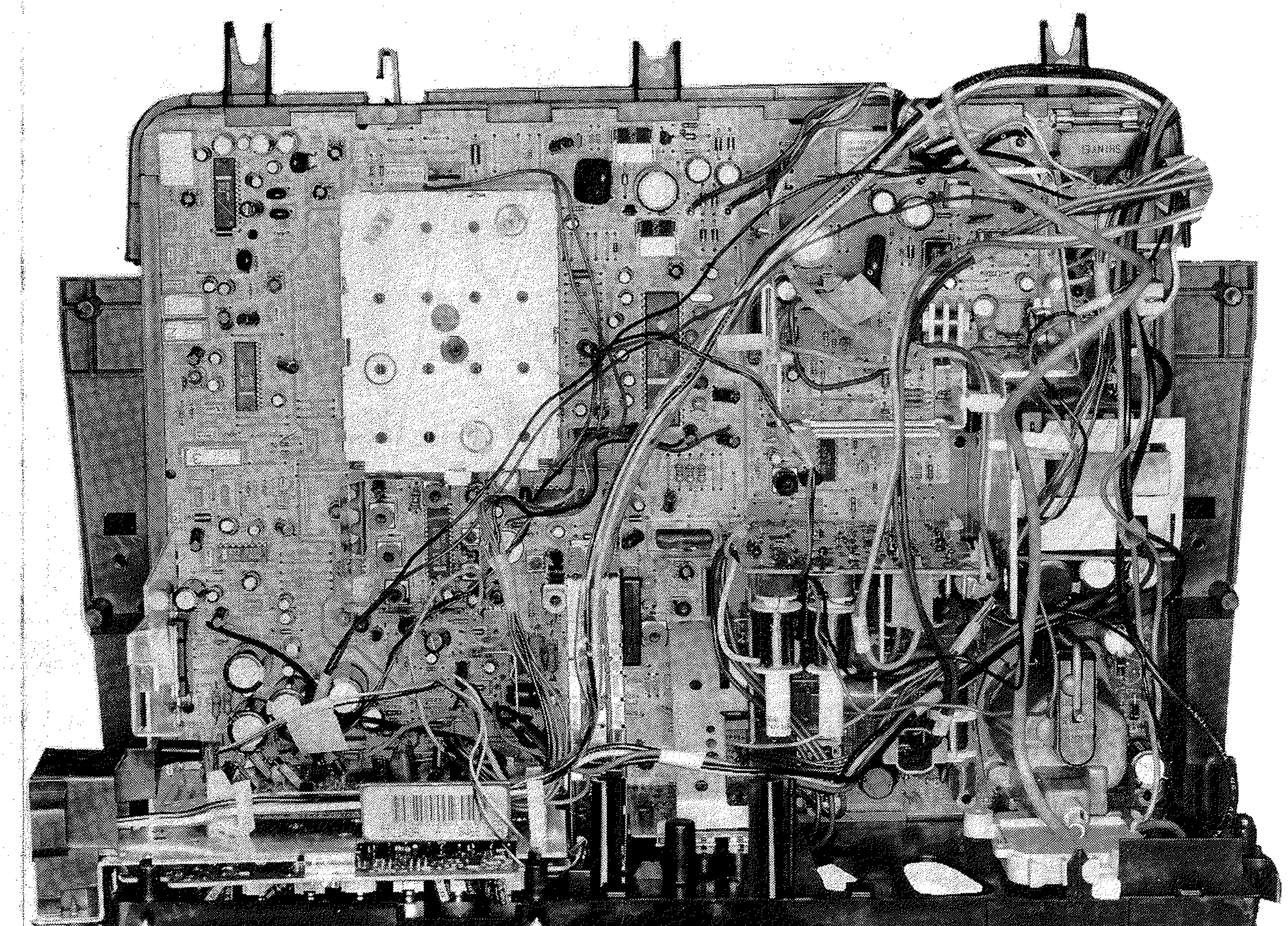

U1600
SAP LAMP DRIVER
LIMITER AMP
PHASE DETECTOR
STEREO LAMP DRIVER
1/2 DIVIDER
PHASE COMP
SAP DISCRIMINATION
SfH VCO
4fH VCO
MODE SWITCH
STEREO DEMODULATOR
PILOT REGENERATOR
SAP SELECT
STEREO MONO/SWITCH
MATRIX
PILOT AMP
PREAMP
PREAMP OUT
COMPOSIT IN
PILOT CANCELLER
MUTE
L+R AMP
U1601
1/2VCC REG
AMP 1
FOL
VCA 1
RMS 1
RMS 2
VCA 2
AMP 5
AMP 4
U2300
IF AGC CONTROL
IF AGC FILTER
RF AGC COMPARATOR
RF AGC DELAY
AGC DET
AFT OUTPUT
AFT DET
AFT TANK
VIDEO TANK
VID DET
VIDEO OUTPUT
NOISE INV
PIX IF GND
GAIN CONTROLLED AMP
PIX VCC
GAIN CONTROL AMP
AFT VCC
QIF 4,5MHz DET & AGC DET
QIF TANK
QIF OUTPUT
QIF AGC FILTER
AUDIO OUTPUT
SIF DET
SIF IF GND
SIF INPUT
EIA COMPARATOR
EIA DCDR SYNC ADJUST
QIF VCC
DISK TANK
U1900
U1800
VOLUME
BASS
TREBLE
BAL
U4100
B+ TRIM
PULSE WIDTH MODULATION
TIMING
CURRENT SET-UP
HOT GND
SHUT DOWN LATCH
ON/OFF
RISE TIME
B+ SENSE
OVER CURRENT SENSE
SLOW START
U4300
BURST WIDTH GATE
BURST GATE
HORIZ RAMP
RAW FLYBACK
HORIZ SYNC
8 H HORIZ OSC
HORIZ DIVIDER
HORIZ BLANKER
VERT SYNC
COUNT DOWN
HORIZ PULSE
COMPOSITE BLANK
VERT OUT
OSC TANK
VERT AMP
REGULATOT
GAIN SW
HORIZ OUT
HORIZ AMP
VERT BLANKER
U4500
BOOST SWITCH
U6101
U6201
U2600
0dB
20bB
AGC FILTER
ACC AMP
SAMPLE AND HOLD
KILLER AMP
ACC/KILLER DETECTOR
1ST CHROMA AMP
KEYED AMP CHTOMA
BIAS FILTER
OVERLOAD DETECTOR
2ND CHROMA (B) AMP
2ND CHROMA (A) AMP
CHROMA PROC OUT
BUFFER
I FILTER
Q FILTER
POWER SUPPLY
CHROMA DEMOD IN
VCO
Q CARRIER IN
I CARRIER IN
AUTOFLESH DEFEAT
CARRIER OUT/FLESH
FLESH PHASE DETECTOR
HUE CONTROL
CHROMA LIMITER
CARRIER LIMITER
MODULATOR



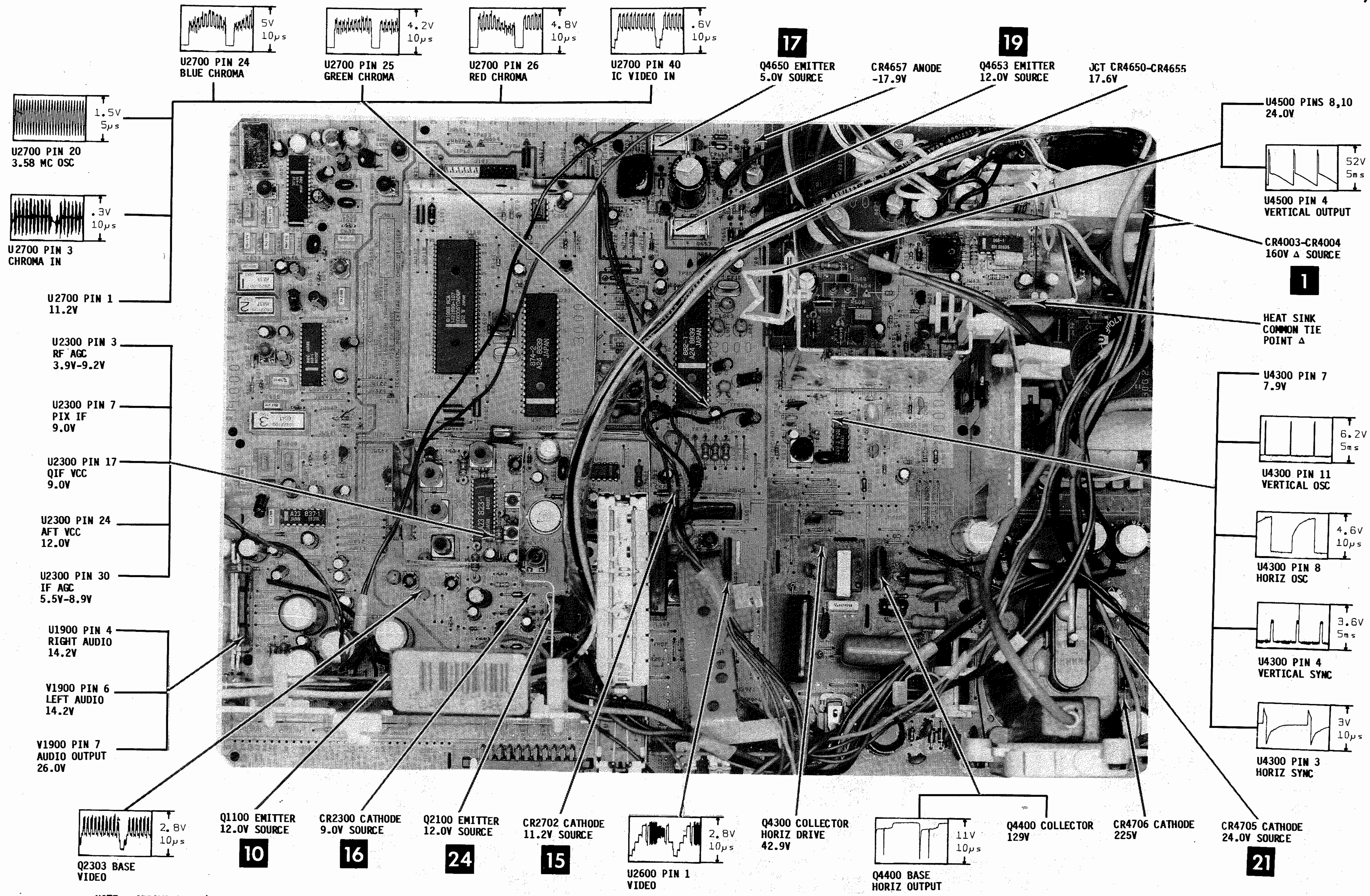
U1600
U1601
Q2303
U2300
U3100
Q2100
U3300
U3200
Q3303
Q3706
Q4650
Q4654
Q2402
Q4653
Q2703
U3600
U4500
Q4201
U2700
Q4501
Q4600
U4100
Q1600
Q4500
Q4900
U4300
Q4301
Q4100
U2600
Q4300
Q4400
Q1101
Q1100
U1800
U1900

MAIN BOARD

2709	H-12	C4901	I-21	FB4301	G-17	Q4300	M-18	R3601	K-2	TP2332	N-7
2712	K-14	C4902	G-20	FB4400	N-21	Q4301	J-19	R3603	O-12	TP2504	R-8
2807	I-15	CF2300	M-6	FB4500	F-18	Q4400	M-19	R3608	K-10	TP2701	L-13
2808	H-15	CR1100	N-4	FL1600	F-1	Q4501	G-19	R3609	K-11	TP2737	H-13
2822	H-13	CR1805	M-2	FL1602	A-1	Q4600	E-21	R3701	A-12	TP2807	E-14
2823	H-16	CR2100	P-9	FL1603	E-1	Q4650	A-13	R3706	A-12	TP4058	O-22
2824	I-13	CR2300	N-9	J3101	B-8	Q4653	D-14	R4000	E-20	TP4300	H-18
2825	E-13	CR2301	J-9	J4400	Q-21	Q4654	A-14	R4001	B-17	TP4904	S-13
3105	C-10	CR2401	B-1	J4500	E-18	Q4900	G-20	R4002	D-27	TUNER	N-12
3108	B-20	CR2501	Q-8	JT1601	H-1	R1102	Q-7	R4003	D-27	U1600	G-2
3601	K-10	CR2701	D-13	JT1602	I-2	R1102A	Q-7	R4004	F-26	U1601	C-2
3602	I-10	CR2702	K-13	JT1604	C-1	R1104	Q-7	R4101	B-22	U1800	L-3
3603	J-10	CR2704	E-12	JT1606	J-3	R1105	Q-7	R4103	E-23	U1900	O-1
3606	J-10	CR3102	D-9	JT1610	D-3	R1606	H-1	R4104	D-22	U2300	L-8
3608	K-11	CR3301	B-6	JT2005	M-8	R1607	G-2	R4105	D-22	U2600	M-15
000	C-20	CR3302	B-7	JT2008	O-7	R1619	E-4	R4106	D-21	U2700	G-14
001	C-23	CR3601	K-12	JT2701	E-1	R1627	C-1	R4108	F-24	U3100	F-7
002	B-25	CR4001	C-25	JW2303	N-11	R1644	A-5	R4109	D-22	U3200	C-9
003	B-27	CR4002	B-25	JW2503	O-7	R1648	B-5	R4111	F-24	U3300	G-10
04	B-27	CR4003	B-27	JW2625	P-7	R1804	R-4	R4112	D-23	U3600	K-11
05	C-25	CR4004	C-27	K4200	A-19	R1811	N-1	R4114	D-23	U4100	D-23
06	G-26	CR4101	C-23	L2100	P-10	R1901	Q-5	R4115	H-24	U4300	J-18
008	D-20	CR4102	C-24	L2300	M-11	R1902	Q-4	R4200	D-20	U4500	E-17
4101	C-23	CR4103	F-23	L2301	M-11	R1903	P-2	R4201	C-22	Y2800	E-15
4104	C-21	CR4104	E-25	L2303	K-8	R1906	K-4	R4205	D-20	Y3101	G-9
4107	E-24	CR4106	F-23	L2304	M-9	R1908	P-2	R4301	K-19		
4110	I-25	CR4201	F-24	L2305	L-9	R1909	P-2	R4309	J-20		
4112	C-22	CR4202	D-20	L2306	J-8	R1911	Q-3	R4313	J-16		
4116	I-24	CR4400	P-20	L2307	M-8	R1912	Q-3	R4314	H-18		
4117	D-23	CR4401	R-21	L2308	K-6	R2100	O-11	R4316	I-19		
4200	G-5	CR4402	R-22	L2309	M-5	R2101	O-11	R4317	I-19		
4301	K-20	CR4500	F-17	L2310	M-6	R2105	O-11	R4318	L-18		
4302	J-18	CR4501	D-18	L2311	N-5	R2201	O-15	R4319	L-18		
4304	I-20	CR4600	F-22	L2312	L-7	R2202	O-15	R4321	O-18		
4305	I-19	CR4650	D-15	L2313	K-7	R2203	O-15	R4326	M-20		
4308	I-17	CR4651	C-15	L2314	J-8	R2304	N-10	R4400	S-15		
4309	I-17	CR4652	A-15	L2315	M-8	R2315	M-9	R4401	S-16		
4312	I-17	CR4653	B-13	L2316	L-9	R2317	O-9	R4402	R-20		
4314	L-18	CR4654	C-15	L2401	H-11	R2326	M-8	R4405	J-20		
4315	O-18	CR4655	D-15	L2601	M-14	R2327	N-6	R4500	I-18		
4316	O-18	CR4656	B-15	L2602	M-14	R2328	N-9	R4502	S-14		
4317	M-17	CR4657	A-16	L2603	M-14	R2332	N-7	R4503	G-18		
4319	L-18	CR4658	A-15	L2604	H-11	R2333	J-7	R4505	H-19		
4400	N-21	CR4659	B-13	L2730	J-15	R2401	H-11	R4507	E-18		
4401	O-20	CR4705	O-26	L2731	J-15	R2406	B-12	R4508	F-19		
4402	P-19	CR4706	Q-27	L2732	J-14	R2407	C-12	R4509	H-18		
4403	O-17	CR4900	I-20	L2801	F-15	R2409	H-17	R4512	F-20		
4404	S-21	CR4901	G-21	L2802	F-15	R2503	N-8	R4517	I-18		
4406	R-22	DL2600	N-13	L2803	F-10	R2509	K-5	R4600	E-20		
4407	R-21	DL2601	L-14	L2806	H-15	R2604	M-15	R4650	A-15		
4408	R-22	DL2700	I-12	L3101	C-6	R2610	M-14	R4651	C-14		
4409	R-22	F4001	A-26	L3301	F-8	R2721	G-12	R4652	A-14		
4501	I-10	FB1100	Q-8	L3311	N-5	R2722	H-12	R4700	K-24		
4503	E-17	FB1600	D-2	L3313	M-7	R2804	E-14	R4701	S-25		
4504	F-19	FB1602	K-2	L3601	N-11	R2904A	S-14	R4702	S-23		
4505	C-18	FB2300	L-11	L4001	B-26	R2905A	S-15	R4703	N-22		
4506	F-19	FB2303	L-9	L4100	F-23	R2906A	S-16	R4704	L-22		
4507	H-17	FB2304	M-8	L4101	F-25	R2950	S-14	R4711	Q-26		
4511	H-17	FB2305	L-8	L4300	J-17	R2951A	S-15	R4900	J-21		
4602	F-21	FB2306	K-7	L4401	P-22	R2952A	S-10	R4901	I-21		
4604	E-20	FB2308	N-8	L4402	R-20	R2953	S-14	R4902	H-20		
4653	B-15	FB2309	M-8	L4403	O-20	R2954	S-15	R4904	G-20		
4656	B-14	FB3101	C-9	L4701	M-23	R2955	S-16	R4905	G-20		
4659	B-13	FB3102	I-8	Q1100	Q-6	R3105	C-8	R4906	F-20		
4661	B-15	FB3201	C-9	Q1101	Q-5	R3106	C-9	R4907	J-21		
4702	M-24	FB3301	I-7	Q1600	J-4	R3108	C-8	RT4200	B-21		
4708	L-26	FB3302	E-12	Q21090	O-10	R3141	E-8	SF2300	L-9		
4709	L-27	FB3303	F-7	Q2300	L-11	R3158	D-8	T4100	J-26		
4710	S-27	FB4100	E-25	Q2303	N-6	R3358	G-8	T4300	N-18		
4713	O-26	FB4101	E-25	Q2703	G-12	R3359	F-12	T4400	P-25		
4714	N-26	FB4102	I-25	Q3703	A-12	R3361	E-12	T4501	R-18		
4715	P-27	FB4200	F-24	Q4100	H-22	R3362	G-12	T4600	F-21		
4716	R-27	FB4201	F-24	Q4202	B-19	R3366	J-19	TP330	M-8		
								TP1603	H-2		



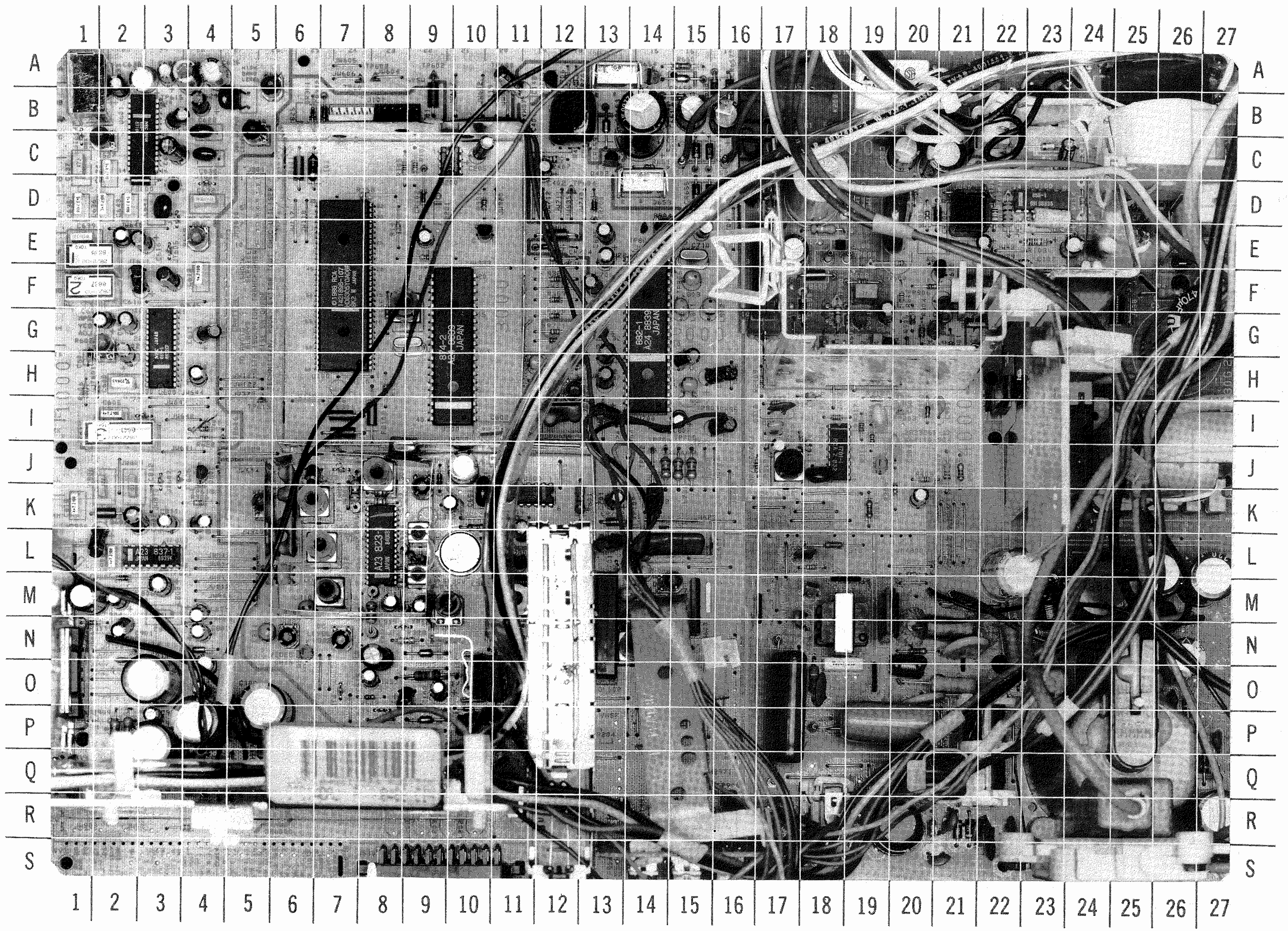
MAIN BOARD-SHIELD LOCATION



NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED

Δ TAKEN FROM COMMON TIE POINT ▽

MAIN BOARD

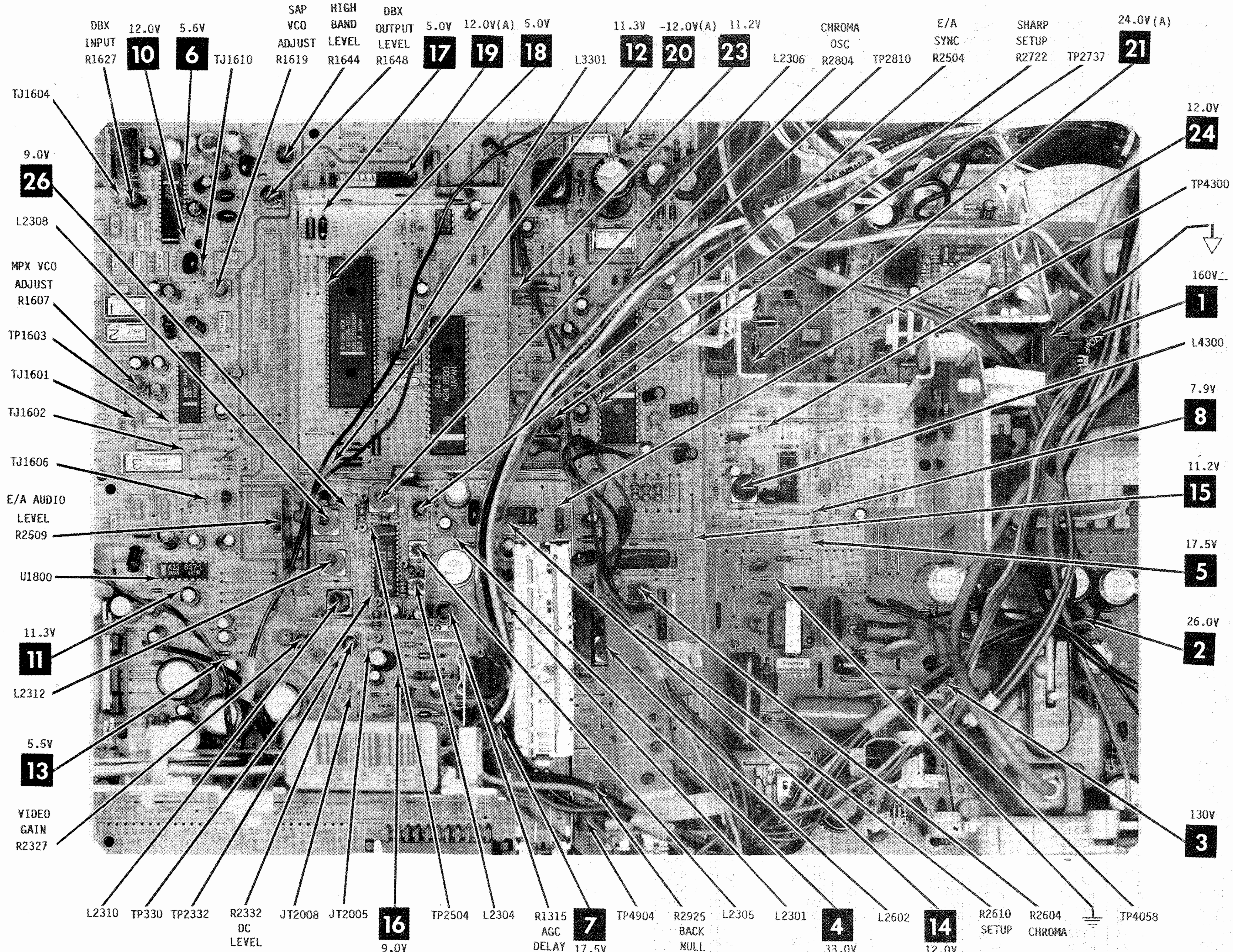


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MAIN BOARD-TOP VIEW

MAIN BOARD-TOP VI

C1100	O-5	C
C1101	P-6	C
C1600	H-2	C
C1602	G-2	C
C1603	G-2	C
C1604	H-1	C
C1605	I-2	C
C1606	G-2	C
C1610	H-4	C
C1611	G-4	C
C1613	F-4	C
C1618	F-2	C
C1624	A-3	C
C1625	A-4	C
C1626	B-4	C
C1627	B-3	C4
C1628	B-3	C4
C1629	B-3	C40
C1630	C-4	C40
C1631	C-3	C40
C1632	D-4	C40
C1633	A-2	C40
C1634	C-2	C4
C1635	D-1	C
C1636	D-2	C
C1637	C-1	C
C1638	A-2	C
C1639	E-1	C
C1640	A-3	C
C1641	D-3	C
C1642	E-2	C
C1643	D-2	C
C1800	L-2	C
C1801	M-2	C
C1802	K-2	C
C1803	M-3	C
C1804	M-3	C
C1805	M-4	C
C1806	J-2	C
C1807	N-4	C
C1808	K-2	C
C1809	K-4	C
C1810	K-1	C
C1811	K-3	C
C1812	K-2	C
C1814	O-4	C
C1901	N-2	C
C1902	P-5	C
C1903	N-2	C
C1904	M-1	C
C1909	Q-2	C
C1910	Q-2	C
C1913	O-3	C
C1914	P-3	C
C2100	P-10	C
C2102	O-9	C
C2103	Q-10	C
C2311	M-8	C
C2312	K-9	C
C2314	N-8	C
C2322	O-9	C
C2402	C-12	C
C2404	B-12	C
C2510	M-9	C
C2511	J-6	C
C2518	O-8	C
C2700	L-13	C
C2701	K-13	C
C2704	F-13	C
C2705	G-13	C
C2706	E-13	C
C2707	G-13	C
C2708	I-16	C



NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED

▽ COMMON TIE POINT

A Howard W. Sams CIRCUITRACE™ Photo

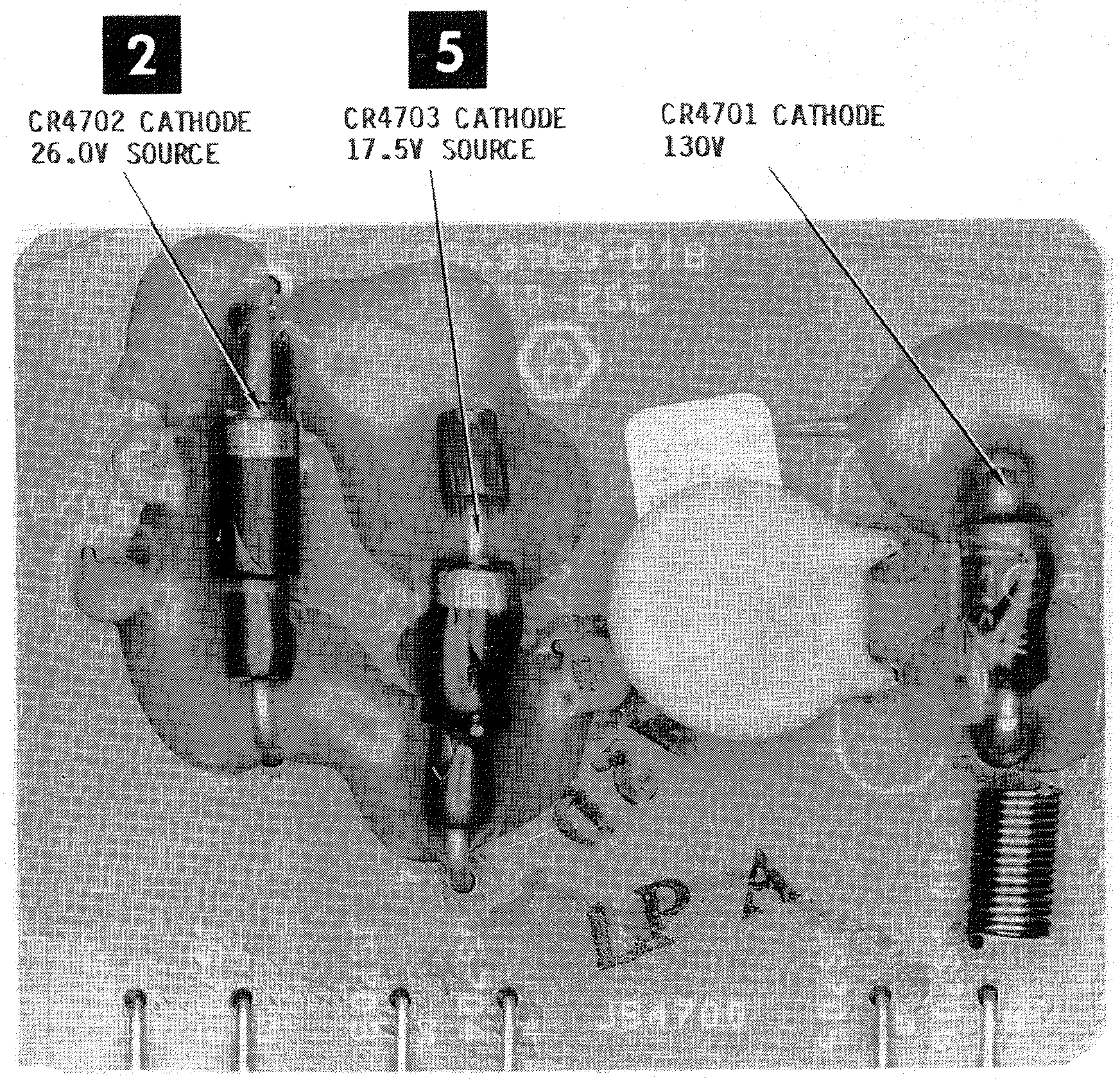
MAIN BOARD

OTTOM VIEW)-GridTrace LOCATION GUIDE

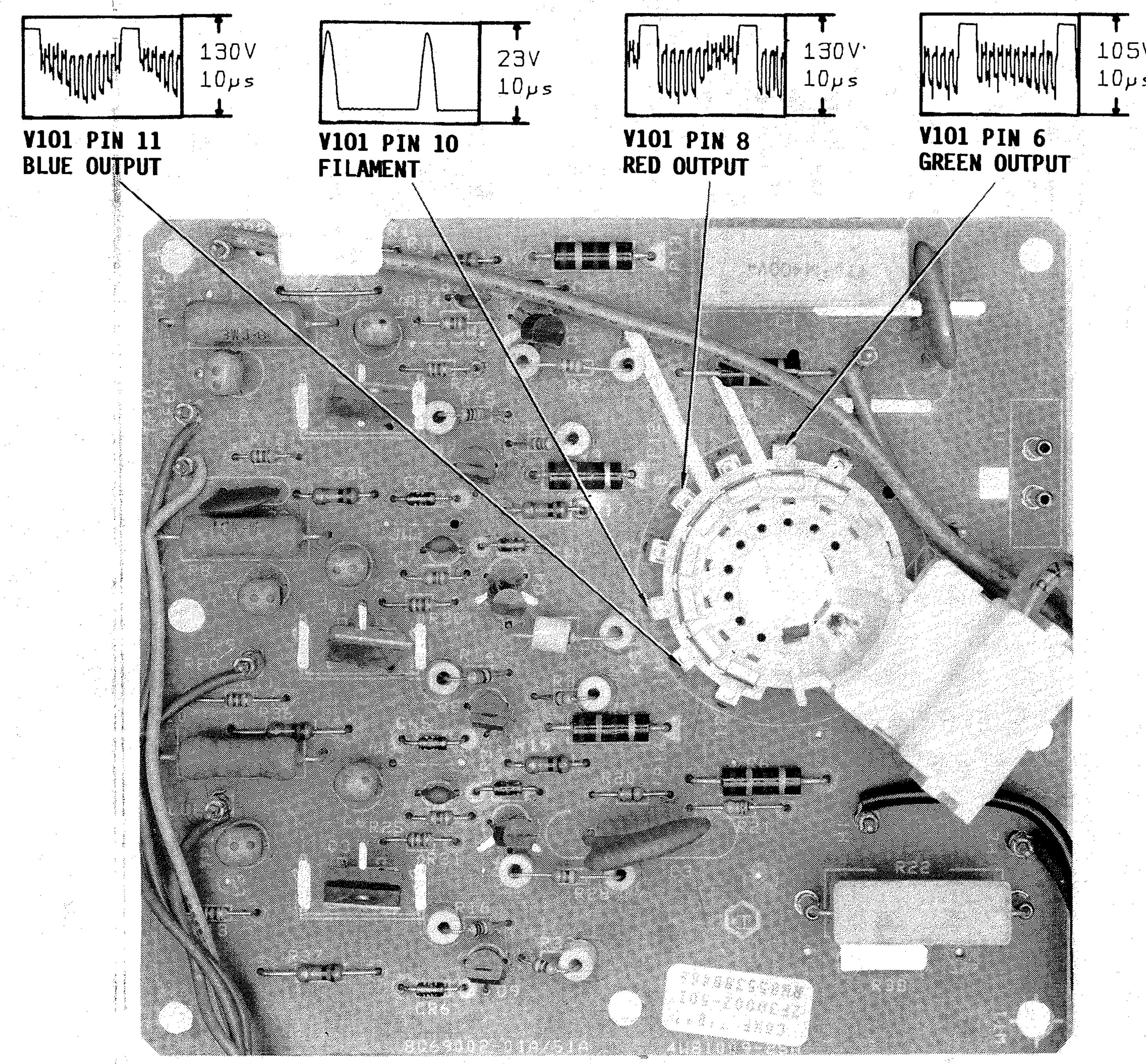
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25	C3109	B-19	C3342	H-22	JC3307	B-19	R1810	M-29	R2607	L-14	R2923	R-12	R3167	E-7	R4304	J-8
24	C3110	B-19	C3604	K-18	JC3308	I-18	R1812	M-24	R2609	M-14	R2924	S-15	R3168	G-8	R4305	K-8
24	C3111	I-22	C3605	K-18	JC3309	G-18	R1813	M-24	R2611	M-14	R2925	R-13	R3169	F-22	R4306	J-9
24	C3112	I-23	C3607	K-18	JC3313	L-15	R1814	L-24	R2612	L-13	R2930	Q-13	R3170	D-18	R4307	I-8
26	C3113	I-23	C3609	L-17	JC3315	I-17	R1815	L-24	R2613	M-14	R2931	Q-13	R3206	C-18	R4308	J-9
27	C3114	H-22	C4102	C-5	JC3316	H-18	R1816	P-23	R2614	M-14	R2933	P-13	R3301	B-22	R4310	J-10
25	C3115	H-23	C4103	D-5	JC3317	H-19	R1817	N-25	R2616	O-14	R2934	Q-14	R3302	H-19	R4311	I-18
21	C3116	H-23	C4106	F-4	JC3318	A-20	R1818	N-25	R2618	N-14	R2935	Q-14	R3303	H-17	R4312	H-19
25	C3117	G-23	C4108	D-4	JC3319	B-19	R1820	P-23	R2619	M-14	R2936	Q-13	R3304	H-17	R4315	I-11
26	C3118	O-23	C4109	E-5	JC3620	K-16	R1821	N-25	R2620	L-14	R2937	R-14	R3305	G-18	R4320	L-10
17	C3119	G-23	C4111	D-4	JC4100	D-6	R1822	P-23	R2701	J-16	R2938	R-14	R3306	F-21	R4321	O-18
17	C3120	G-23	C4113	D-5	JC4101	D-6	R1823	O-24	R2702	K-15	R2939	R-13	R3307	F-20	R4325	M-10
18	C3121	G-23	C4201	F-22	JC4501	G-9	R1824	N-24	R2703	J-15	R2951	R-12	R3310	I-19	R4501	H-9
18	C3123	I-22	C4202	G-5	JC4502	G-10	R1904	K-25	R2704	J-14	R2952	R-12	R3311	I-19	R4502	H-9
18	C3124	E-22	C4300	I-10	JC4503	G-11	R1910	M-26	R2705	J-15	R2953	R-12	R3312	I-19	R4504	H-19
19	C3125	D-18	C4306	J-8	JC4600	D-15	R2300	N-17	R2709	L-14	R3101	D-20	R3313	I-19	R4506	D-10
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19	C3129	H-22	C4313	J-9	R1100	P-22	R2305	M-17	R2713	G-15	R3107	C-20	R3319	I-19	R4515	F-9
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22	C3136	E-22	C4515	E-11	R1600	I-27	R2309	N-17	R2719	F-19	R3111	I-22	R3323	E-19	R4520	E-11
19	C3137	D-23	C4600	F-6	R1601	I-26	R2310	L-19	R2720	H-15	R3112	I-22	R3324	E-19	R4521	G-11
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21	C3139	D-23	C4603	F-6	R1608	F-26	R2312	J-19	R2724	H-15	R3114	H-22	R3328	D-21	R4602	F-6
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15	C3143	C-23	C4655	C-13	R1614	J-24	R2318	K-18	R2732	F-15	R3118	F-22	R3332	E-18		
12	C3144	B-19	C4657	C-13	R1615	G-27	R2319	M-18	R2801	K-12	R3119	B-10	R3333	F-17		
16	C3145	G-17	C4658	D-13	R1616	G-24	R2320	K-20	R2802	E-13	R3120	D-18	R3334	F-18		
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14	C3302	H-17	JC1604	A-22	R1626	A-26	R2330	M-22	R2810	H-14	R3127	E-20	R3341	F-17		
13	C3303	H-17	JC1605	A-22	R1627	B-26	R2331	N-18	R2811	G-13	R3128	E-23	R3442	F-17		
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13	C3313	E-17	JC2000	Q-13	R1637	D-25	R2401	H-17	R2818	F-13	R3136	G-22	R3450	G-18		
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13	C3320	I-18	JC2308	I-18	R1643	B-23	R2501	N-19	R2901	Q-14	R3142	I-21	R3455	G-14		
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5	C3335	F-19	JC2908	Q-13	R1658	A-23	R2517	K-22	R2916	R-14	R3156	E-21	R3703	B-14		
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Correction made on Reprint 10/92
AL

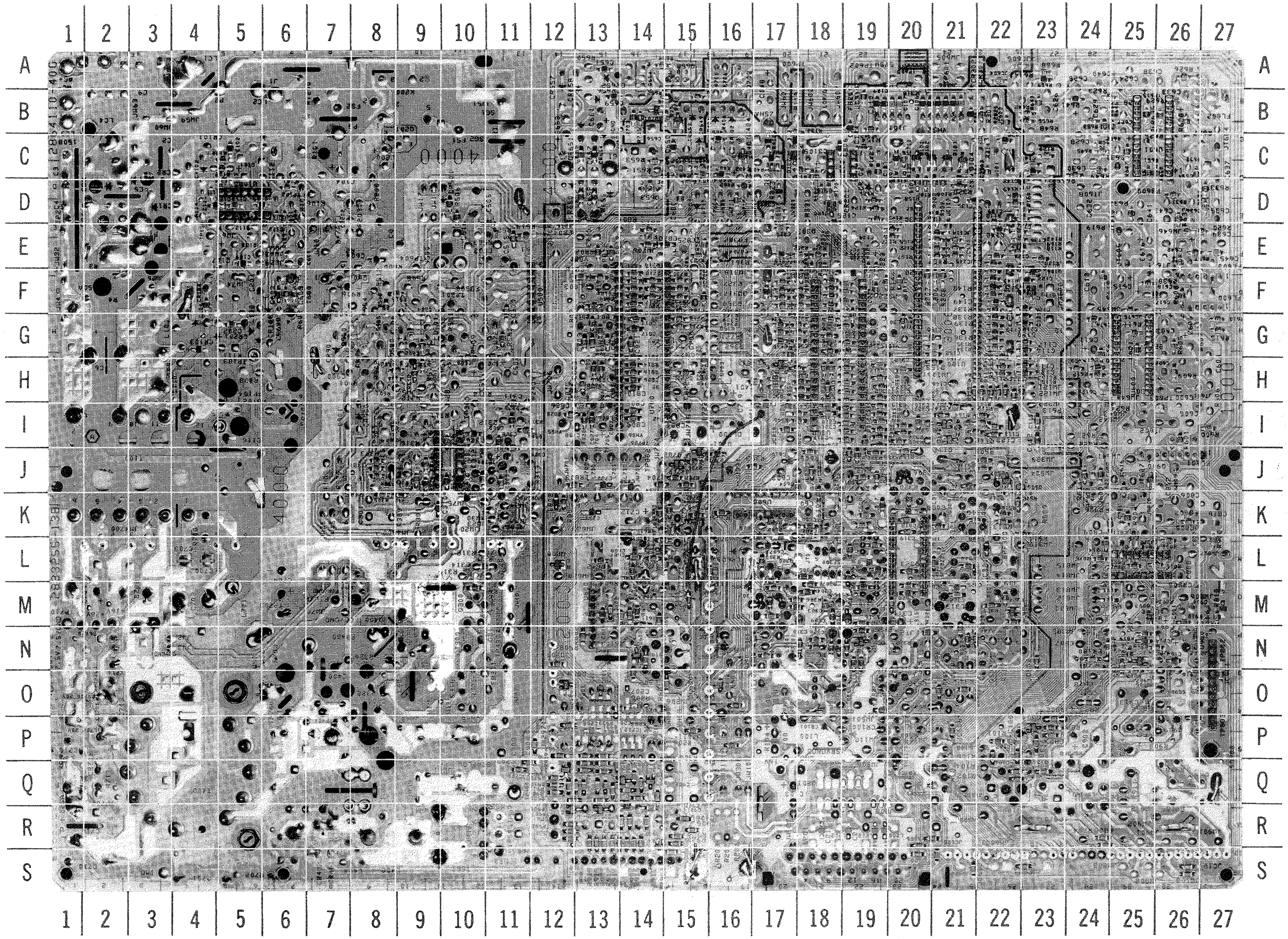
RCA
CHASSIS CTC140AJ



A Howard W. Sams QUICK-CHECKS™ Photo DIODE BOARD



A Howard W. Sams QUICK-CHECKS™ Photo CRT BOARD



A Howard W. Sams GRIDTRACE™ Photo

MAIN BOARD (BOTTOM VIEW)

MAIN BOARD (B

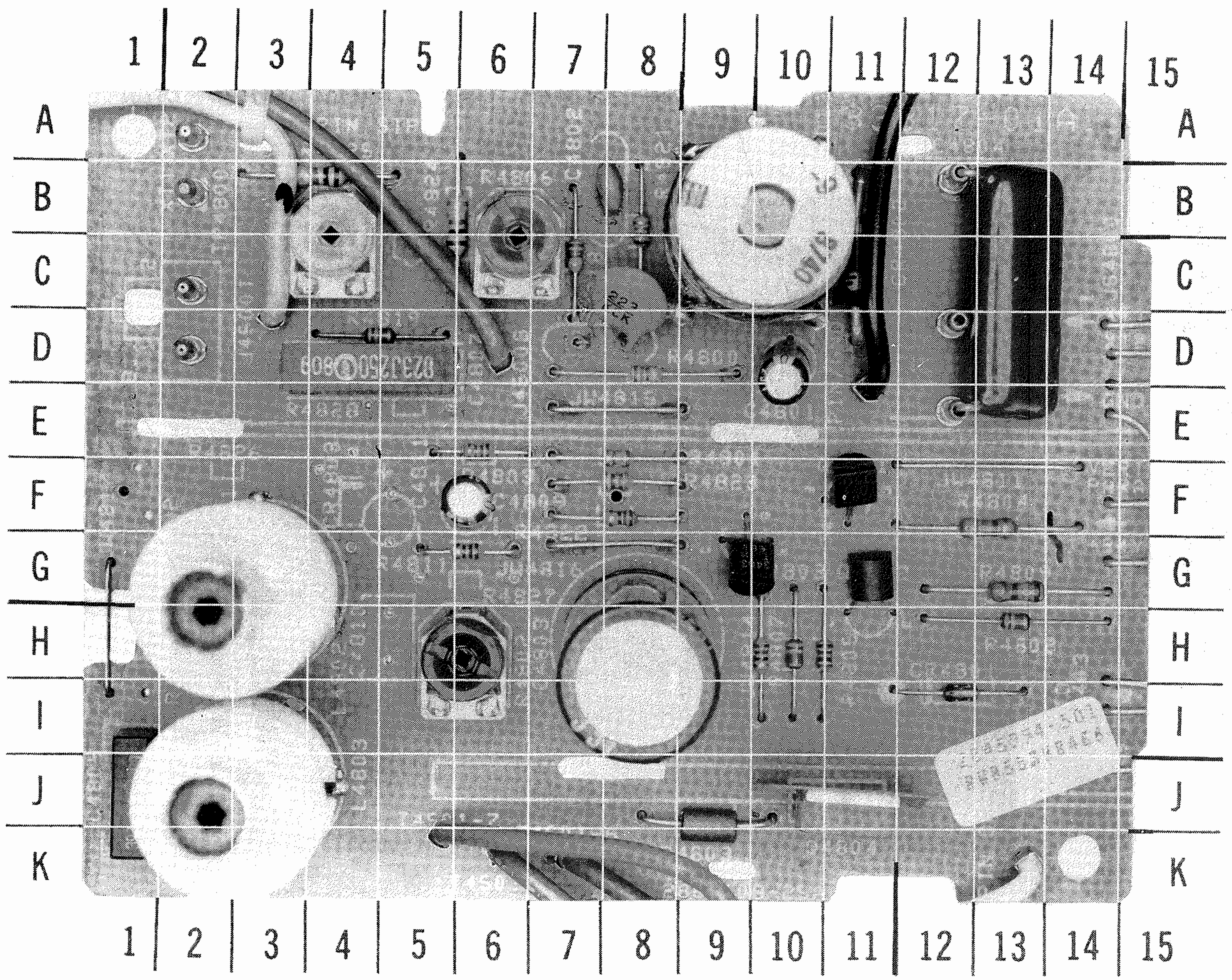
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C2302	M-
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C2306	N-
C2307	M-
C2308	L-
C2310	N-
C2315	O-
C2316	J-
C2318	K-
C2319	K-
C2320	J-
C2321	L-
C2323	L-
C2326	M-
L2327	M-
L2328	M-
L2329	M-
C2401	H-
C2403	C-
C2404	B-
C2405	C-
C2508	K-
C2509	N-
C2517	K-
C2604	M-
C2605	M-
C2606	M-
C2607	L-
C2703	G-
C2710	E-
C2802	K-
C2804	F-
C2805	I-
C2806	H-
C2809	I-
C2810	H-
C2811	F-
C2812	G-
C2813	G-
C2814	G-
C2815	F-
C2816	F-
C2817	G-
C2818	F-
C2820	E-
C2821	G-
C2826	I-
C2827	I-
C2901	R-
C2902	Q-
C2903	Q-
C2904	P-
C2905	R-
C2907	Q-
C2908	R-
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C3107	C-2

PINCUSHION BOARD -GridTrace LOCATION GUIDE

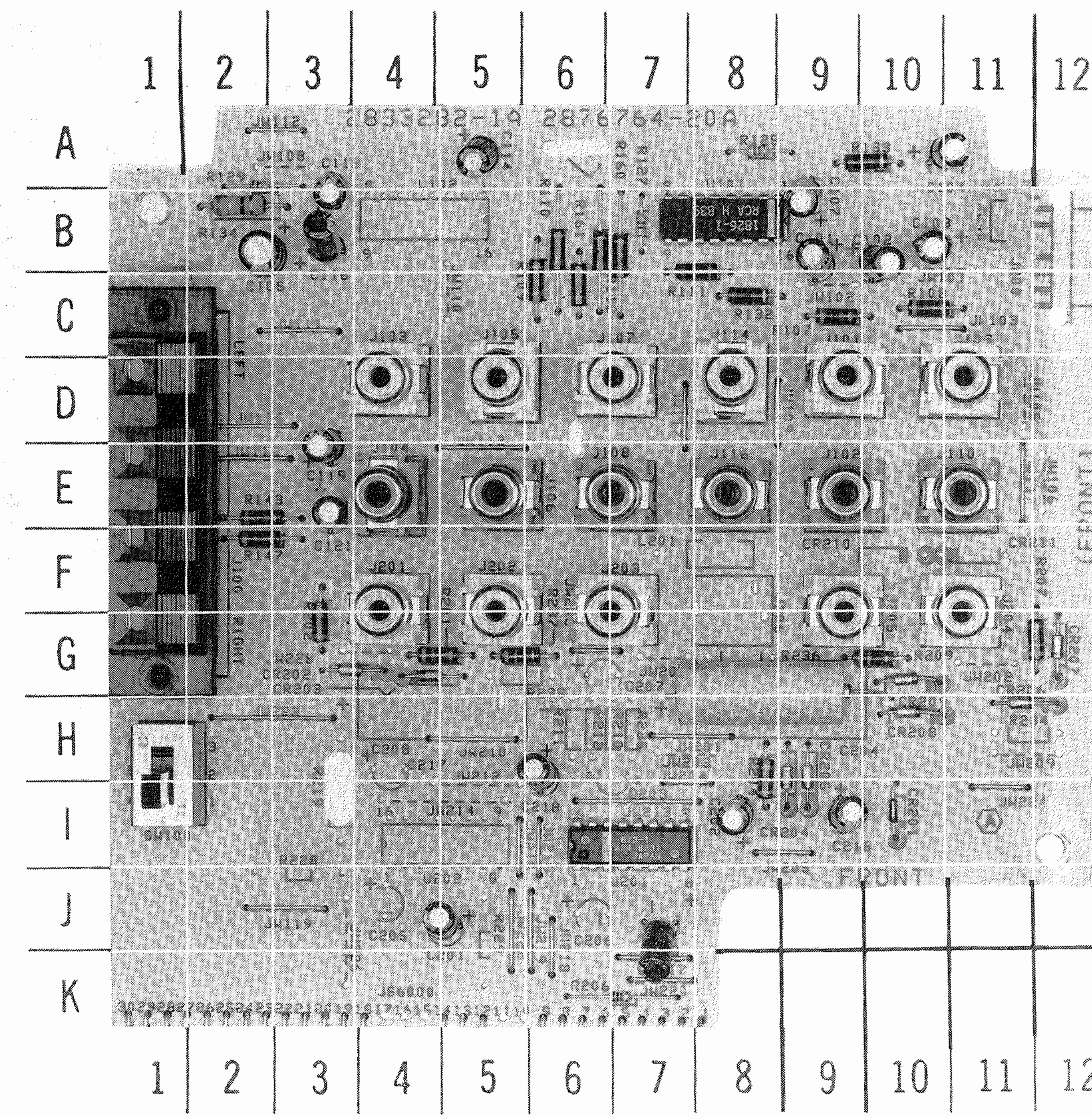
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C4803	I-3	J4801	C-2	R4800	D-8	R4808	H-13	R4821	B-8
C4804	C-13	L4801	B-10	R4801	F-8	R4809	G-13	R4822	F-8
C4805	J-1	L4802	H-2	R4802	H-6	R4811	E-6	R4823	F-8
C4808	C-8	L4803	J-2	R4803	G-6	R4812	H-10	R4824	B-6
C4809	F-6	Q4801	F-11	R4804	F-13	R4814	B-4	R4825	B-4
D4801	I-12	Q4802	G-11	R4805	H-10				

AUDIO/VIDEO BOARD (TOP VIEW)-GridTrace LOCATION GUIDE

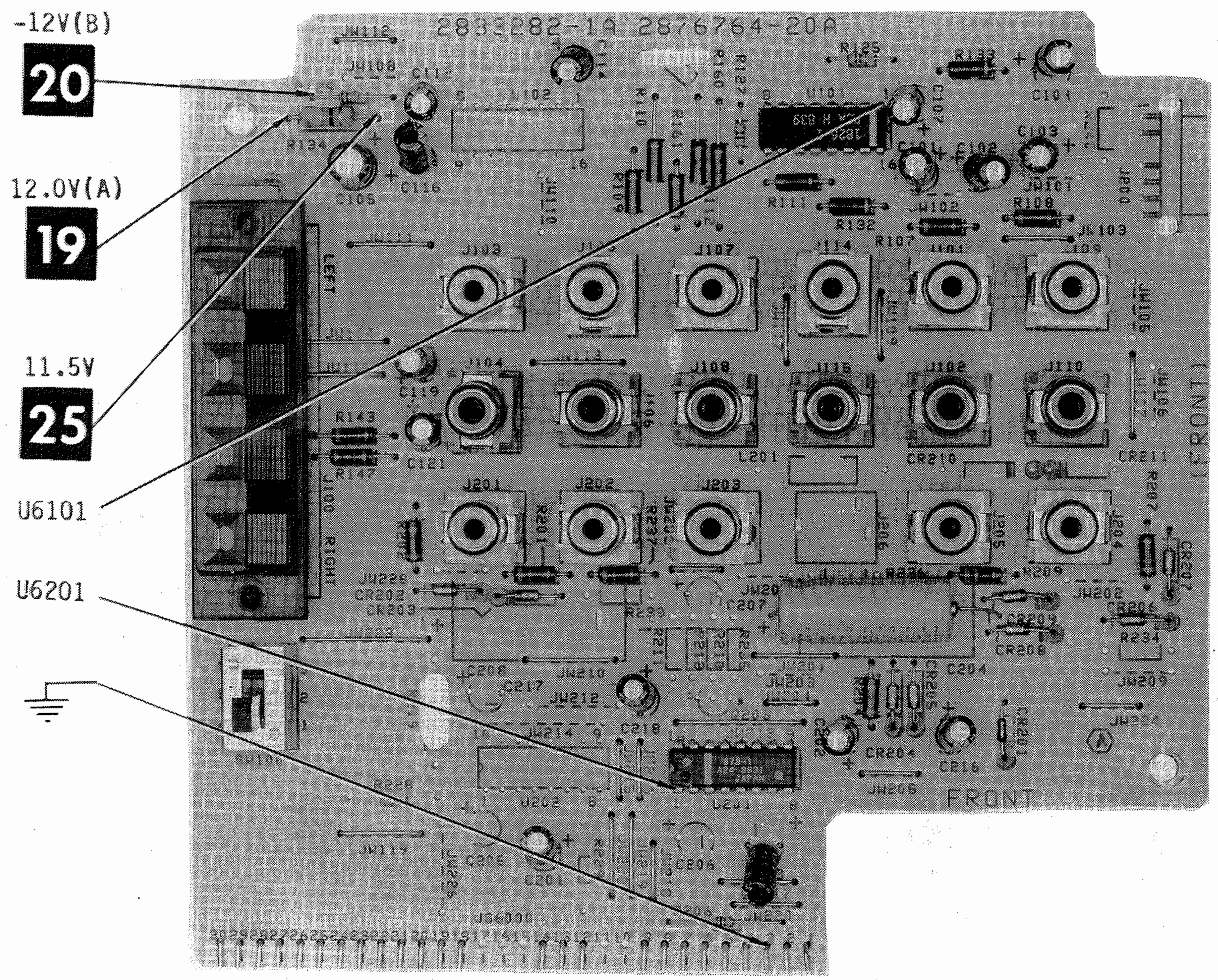
C6101	B-9	C6216	I-9	J6102	E-9	J6203	F-6	R6127	
C6102	B-10	C6218	H-6	J6103	D-4	J6204	F-11	R6128	
C6103	B-10	D6101	I-10	J6104	E-4	J6205	F-9	R6129	
C6104	A-11	C6201	G-4	J6105	D-5	JC201	I-4	R6131	
C6105	B-2	C6202	G-4	J6106	E-6	JC203	H-8	R6132	
C6107	B-9	C6203	H-9	J6107	D-7	R6101	G-5	R6133	
C6112	A-3	C6204	H-9	J6108	E-7	R6107	C-9	R6143	
C6114	A-5	C6205	H-11	J6109	D-11	R6108	C-10	R6147	
C6115	B-3	C6206	G-12	J6110	E-11	R6109	C-6	R6160	
C6119	E-3	C6208	H-10	J6114	D-8	R6110	B-6	R6161	
C6121	E-3	C6209	G-10	J6115	E-8	R6111	B-11	SW6100	
C6201	J-5	J6100	H-1	J6201	F-4	R6112	B-6	V6201	
C6204	G-8	J6101	D-9	J6202	F-5	R6125	A-8	V6202	



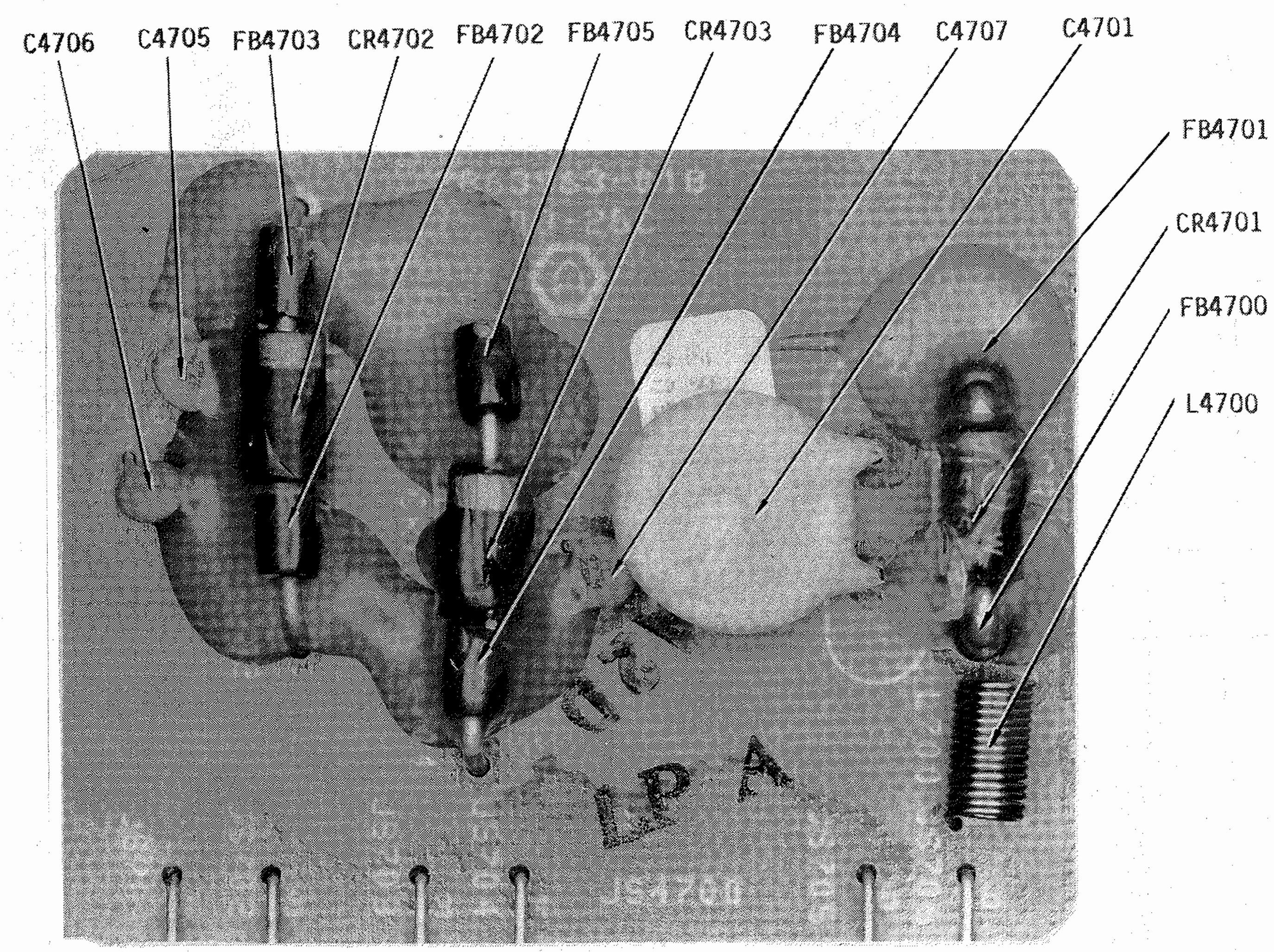
A Howard W. Sams GRIDTRACE™ Photo   PINCUSHION BOARD



A Howard W. Sams GRIDTRACE™ Photo   AUDIO/VIDEO BOARD (TOP VIEW)



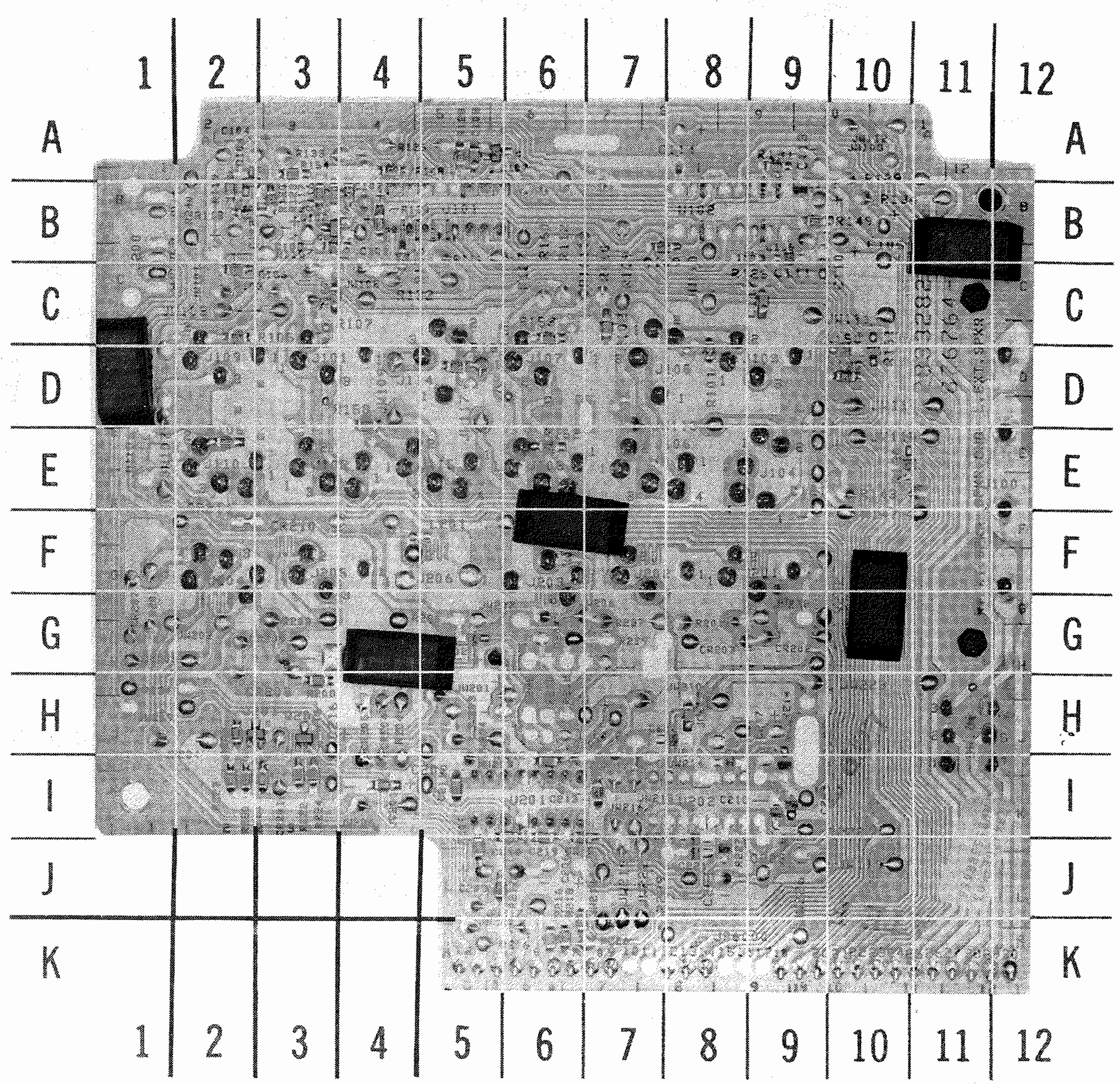
AUDIO/VIDEO BOARD



DIODE BOARD

AUDIO/VIDEO BOARD (BOTTOM VIEW)-GridTrace LOCATION GUIDE

C6108	A-5	C6213	I-7	Q6104	B-2	R6217	J-5	R6223	I-2
C6109	B-9	C6214	J-6	Q6201	H-3	R6218	K-6	R6224	I-3
C6111	I-5	C6215	J-6	Q6202	H-3	R6220	I-2	R6225	H-6
C6117	C-9	C6219	J-6	R6205	J-5	R6221	I-3	R6226	K-6
C6212	I-6	Q6102	B-2	R6216	K-6	R6222	I-3		

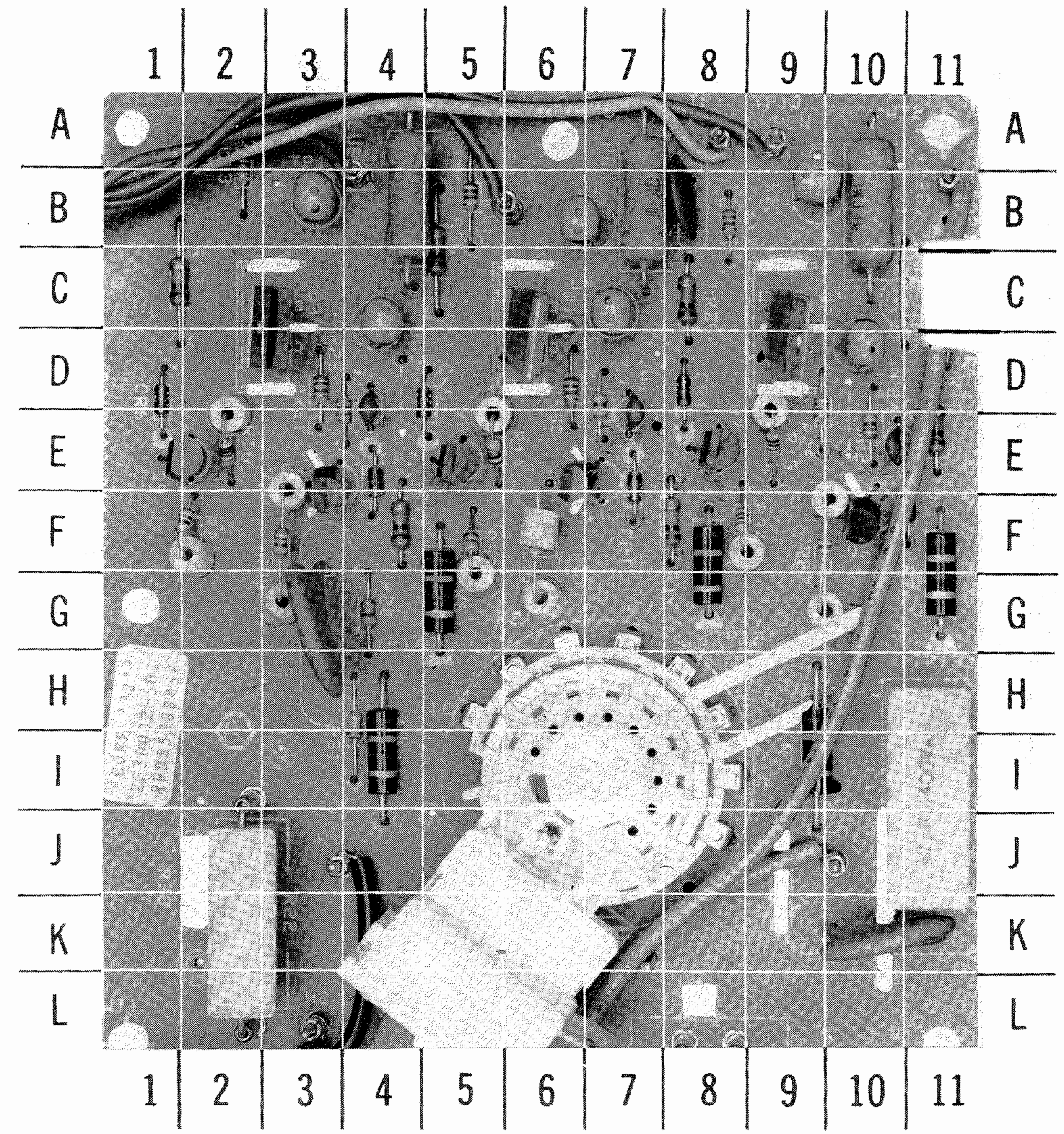


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AUDIO/VIDEO BOARD (BOTTOM VIEW)

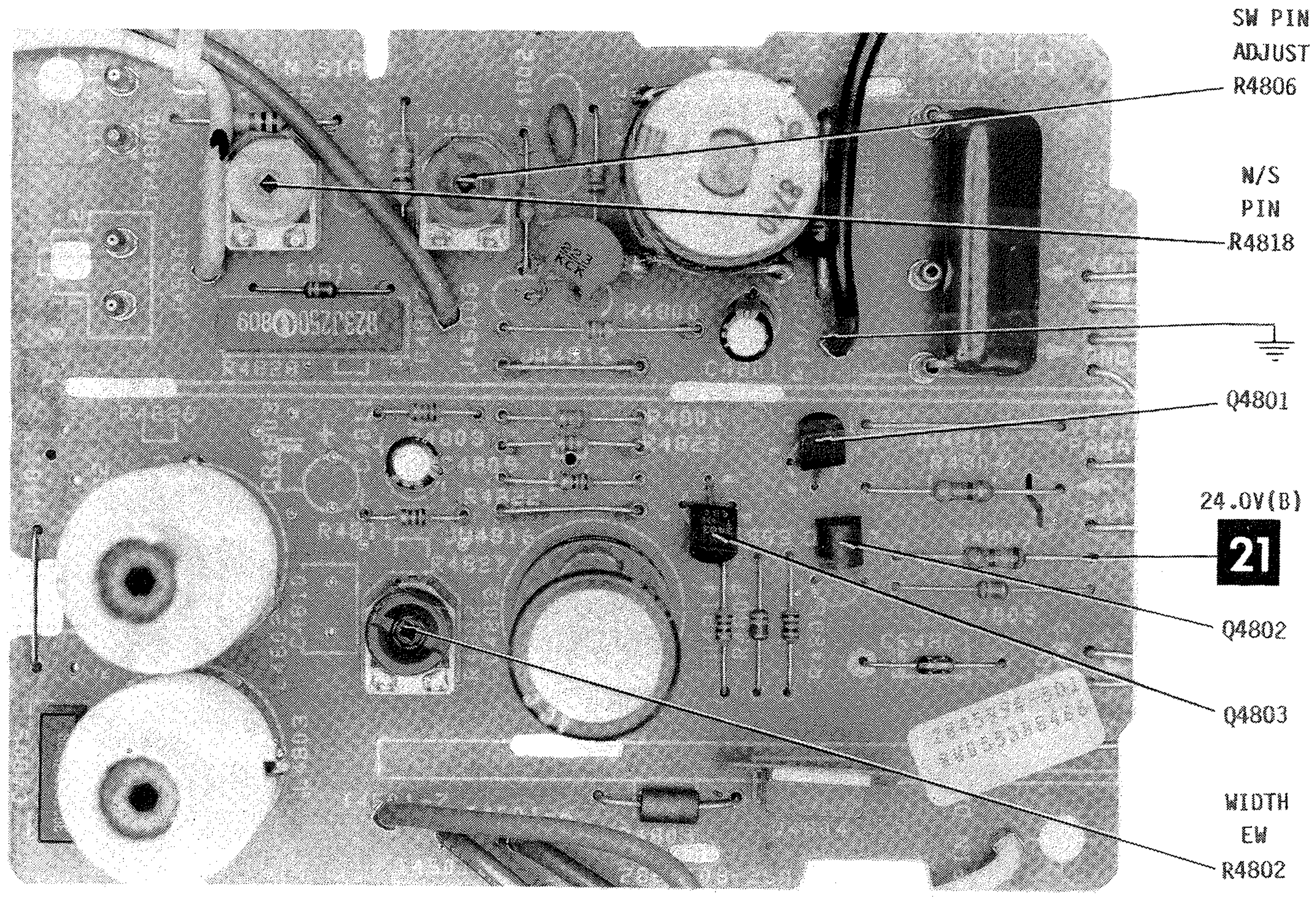
CRT BOARD-GridTrace LOCATION GUIDE

C5100	I-11	L5001	B-6	Q5008	E-5	R5013	A-2	R5026	F-6
C5101	B-8	L5002	B-9	Q5009	E-2	R5014	E-5	R5027	F-10
C5102	G-3	L5003	B-3	R5001	E-7	R5015	E-9	R5028	F-3
C5106	K-10	L5004	C-7	R5003	F-8	R5016	E-2	R5029	D-9
C5107	D-7	L5005	D-10	R5004	F-11	R5017	F-8	R5030	D-6
C5108	E-10	L5006	C-4	R5005	G-5	R5018	E-11	R5031	D-3
C5109	D-4	Q5001	D-6	R5006	I-4	R5019	F-19	R5032	F-2
D5001	E-7	Q5002	C-9	R5007	I-9	R5020	G-4	R5033	F-5
D5002	F-11	Q5003	C-2	R5008	B-7	R5021	H-4	R5034	F-8
D5003	E-3	Q5004	E-6	R5009	B-10	R5022	K-2	R5035	C-8
D5004	C-8	Q5005	F-10	R5010	B-4	R5023	D-7	R5036	B-5
D5005	D-5	Q5006	E-3	R5011	B-5	R5024	E-10	R5037	C-1
D5006	D-1	Q5007	E-8	R5012	B-8	R5025	D-3		

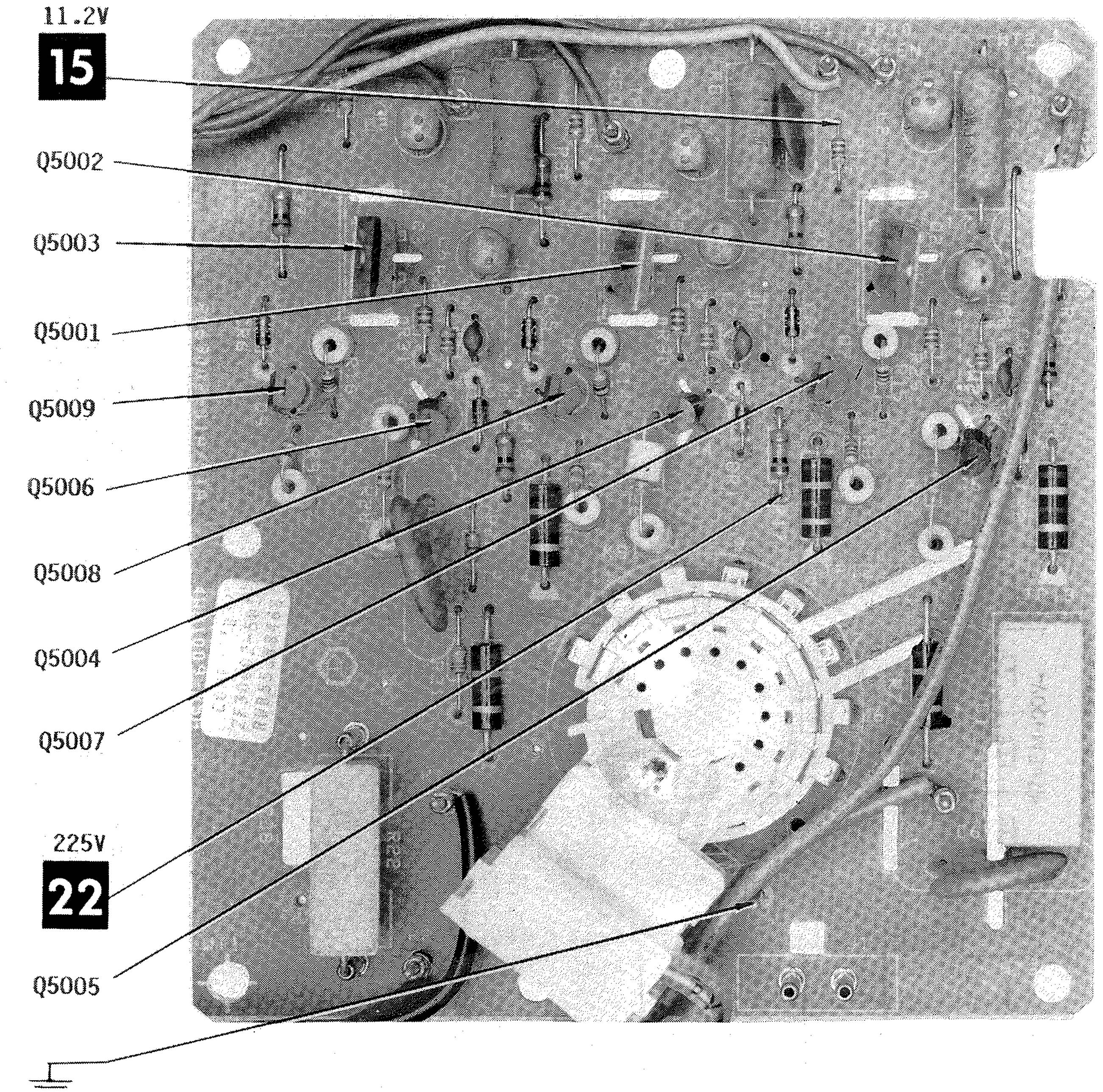


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CRT BOARD



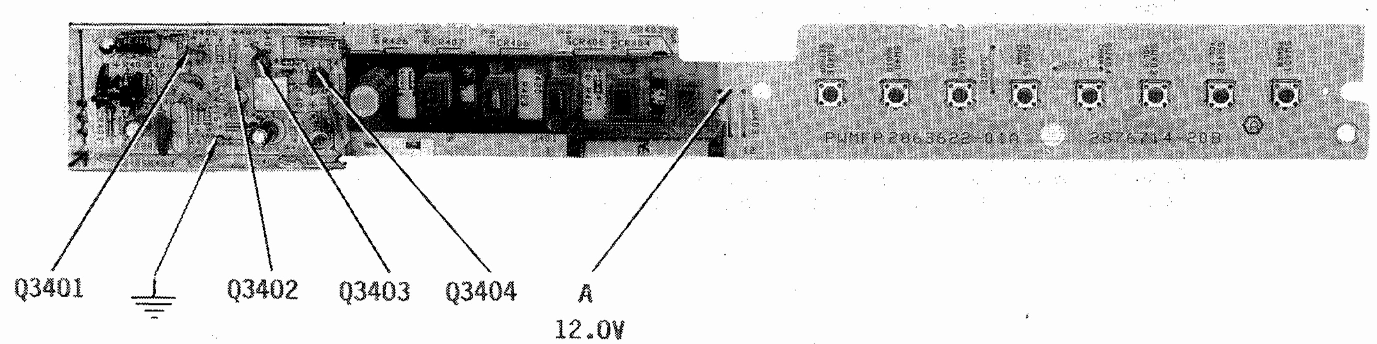
A Howard W. Sams CIRCUITRACE® Photo PINCUSHION BOARD



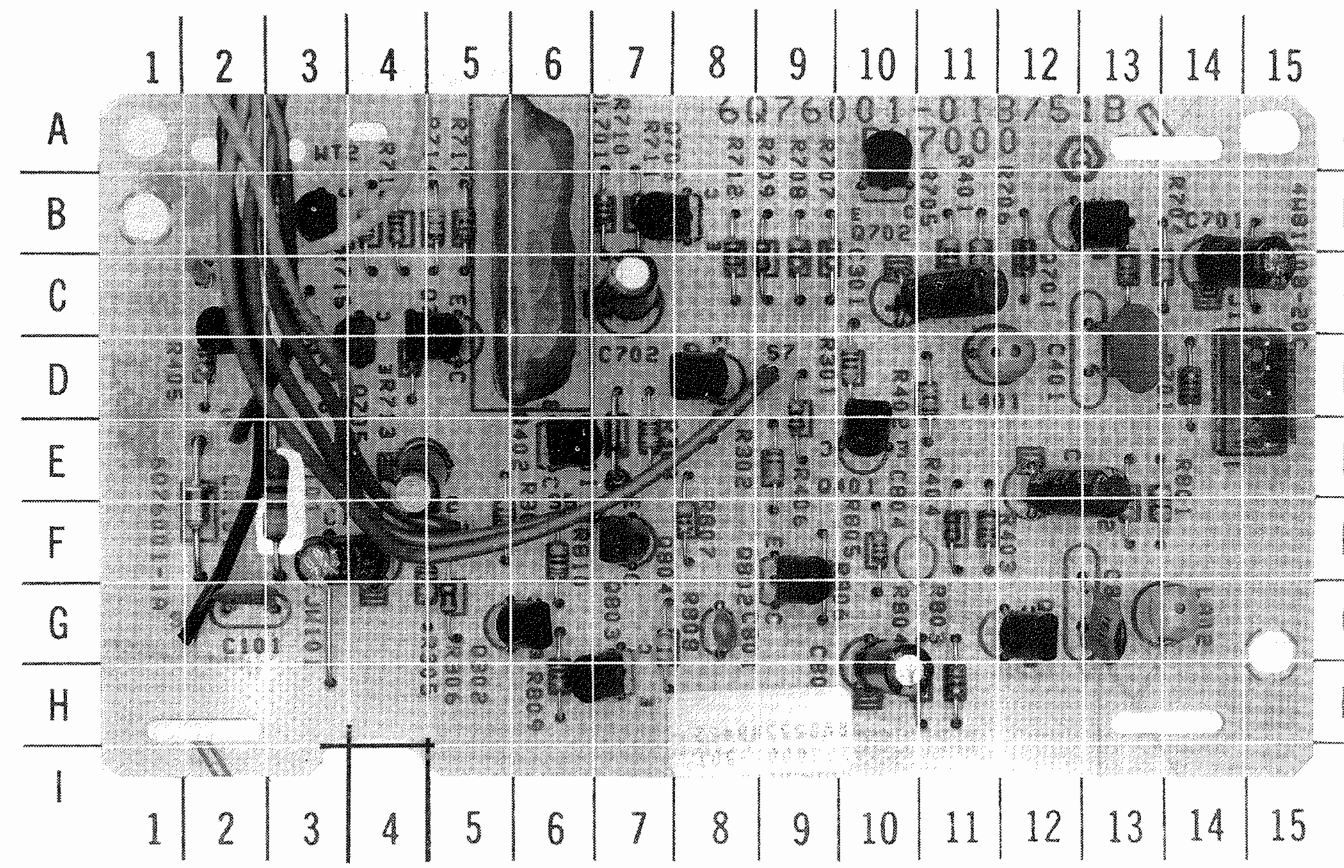
A Howard W. Sams CIRCUITRACE® Photo CRT BOARD

S-VHS BOARD-GridTrace LOCATION GUIDE

C7101	G-2	L7400	D-12	Q7804	F-7	R7417	B-5	R7714	B-5
C7102	F-3	L7802	G-14	R7101	E-3	R7418	C-3	R7715	B-4
C7103	C-11	Q7301	D-8	R7301	D-10	R7701	C-15	R7716	B-4
C7104	E-4	Q7302	G-6	R7302	E-9	R7702	C-13	R7719	C-15
C7401	D-13	Q7401	E-10	R7303	E-7	R7704	C-14	R7801	F-14
C7402	E-12	Q7402	E-6	R7304	F-5	R7705	C-11	R7802	F-13
C7801	G-8	Q7701	B-13	R7305	G-4	R7706	C-12	R7803	H-11
C7802	F-9	Q7702	A-10	R7306	G-5	R7707	C-9	R7804	H-11
C7803	H-10	Q7703	B-7	R7401	C-11	R7708	B-9	R7805	F-10
C7805	G-13	Q7704	C-5	R7402	D-11	R7709	C-9	R7806	F-9
D7101	F-2	Q7706	B-3	R7403	F-10	R7710	B-7	R7807	F-8
D7301	E-7	Q7707	C-2	R7404	F-11	R7711	B-7	R7808	G-7
D7401	D-12	Q7801	G-12	R7405	D-2	R7712	C-8	R7809	H-6
DL7701	B-6	Q7802	F-9	R7406	E-9	R7713	D-4	R7810	F-6
J1	D-15	Q7803	H-7						



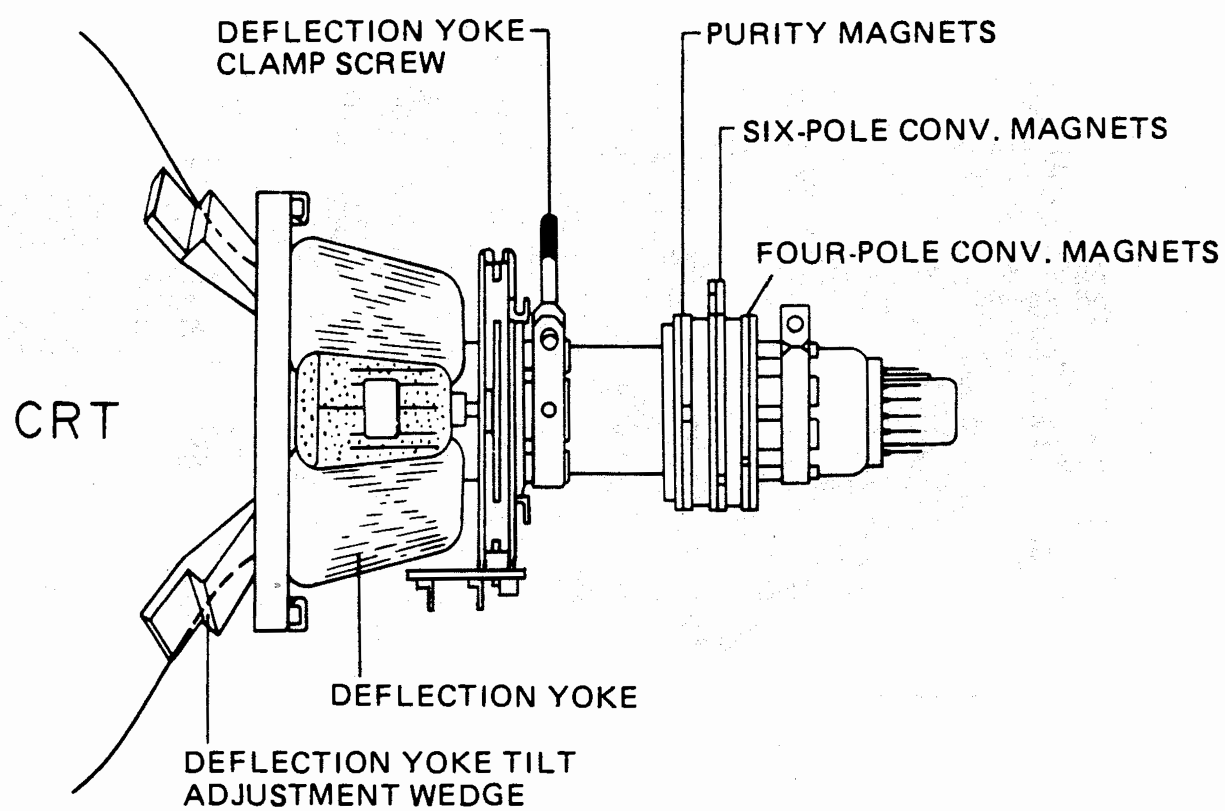
FRONT CONTROL PANEL MFP1



A Howard W. Sams GRIDTRACE™ Photo

S-VHS BOARD

antenna terminals and tune in a dot pattern. Adjust the tabs of the 4-pole magnets to converge the red and blue dots at the center of the screen. Note: Rotate the two tabs of each set of magnets equally and opposite to converge horizontally and rotate both tabs in the same direction to converge vertically. Four and 6 pole magnets interact, repeat adjustment until center convergence is correct. Remove the rubber wedges between the Deflection Yoke and CRT. Tilt the Deflection Yoke up or down to converge the vertical lines at top and bottom of screen and the horizontal lines at the right and left sides of the screen. Tilt the Deflection Yoke right or left to converge horizontal lines at top and bottom of screen and the vertical lines at the right and left sides of the screen. Apply adhesive to wedges and carefully replace on CRT. Tighten yoke clamp screw.



CRT NECK ASSEMBLY

NOTE: Adjustments made using B&K Model 2009 MTS TV/Stereo generator or equivalent. Control settings use initial power up settings unless otherwise indicated. Remove power from set and restore to initialize.

EIA AUDIO LEVEL ADJUSTMENT

Connect generator to antenna terminals. Release both SAP and Pilot buttons. Select 300Hz audio frequency, L+R modulating signal. Select Stereo mode on receiver. Connect a digital AC voltmeter to JT2008, low side to ground. Adjust R2509 for 106mV p-p.

MPX VCO ADJUSTMENT

Connect generator to antenna terminals. Release both SAP and Pilot buttons, select Off modulating signal. Select Stereo mode on receiver. Connect a 51K ohm resistor from TP1603 to ground. Connect a 10ufd capacitor from (+) JT1601 to (-) ground. Connect a frequency counter to JT1602. Adjust MPX VCO Control (R1607) for 15.734kHz ±60Hz. Remove resistor and capacitor.

SAP VCO ADJUSTMENT

Connect generator to antenna terminals. Select SAP and No modulating signal. Select Mono mode on receiver. Connect a digital DC voltmeter to JT1610, low side to ground. Note voltage. Select SAP mode on receiver. Adjust SAP VCO Control (R1619) for the same voltage.

DBX INPUT LEVEL ADJUST

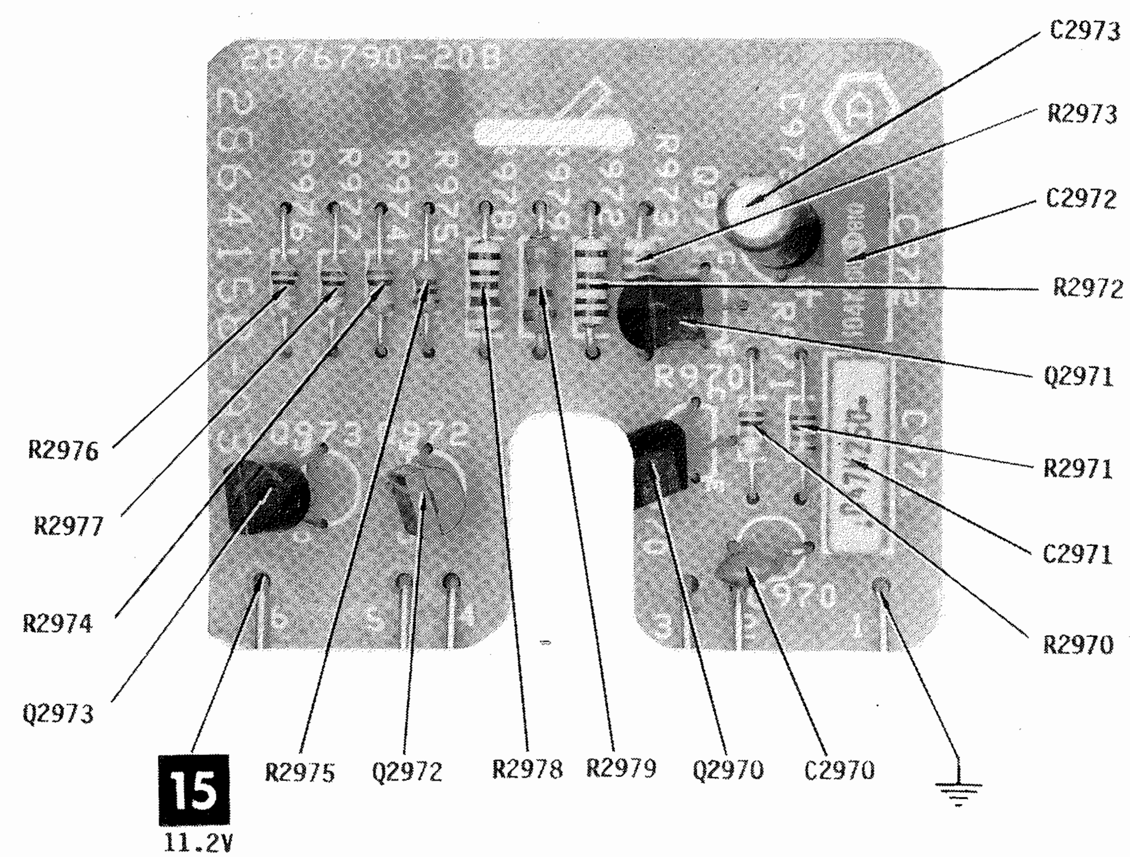
Connect generator to antenna terminals. Select Pilot, 300Hz audio frequency, Left modulating signal. Select Stereo mode on receiver. Connect a digital AC voltmeter to JT1604, low side to ground. Adjust DBX Level Control (R1627) for 94.4mV rms ±3mV.

DBX OUTPUT LEVEL (LOW SEPARATION) ADJUSTMENT

Connect generator to antenna terminals. Select Pilot, 300Hz audio frequency, Left modulating signal. Connect an oscilloscope to JT1606, low side to ground. Adjust R1648 for MINIMUM.

HIGHBAND LEVEL (HI SEPARATION) ADJUSTMENT

Connect generator to antenna terminals. Select Pilot, 8kHz audio frequency, and Left modulating signal. Connect an oscilloscope to JT1606, low side to ground. Adjust Highband Level Control (R1644) for MINIMUM. Repeat DBX Output Level and Highband Level Adjustments until no further improvement can be obtained with adjustment.

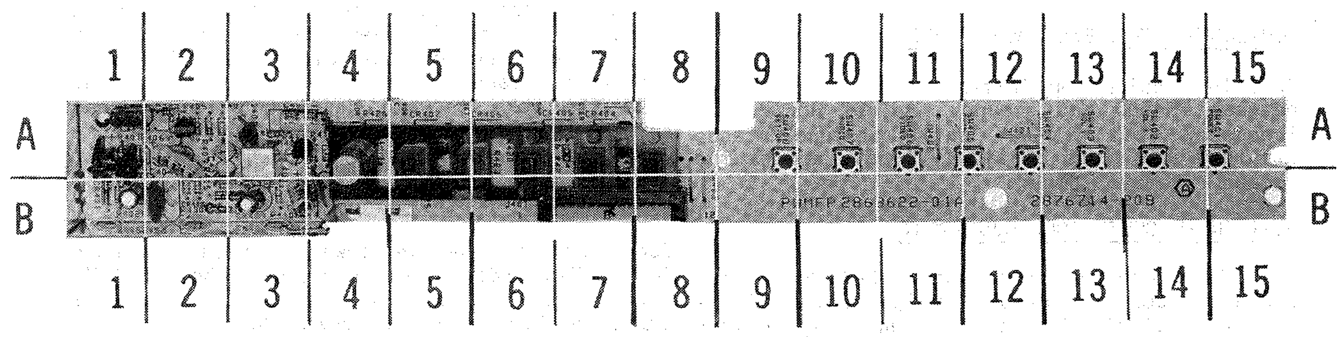


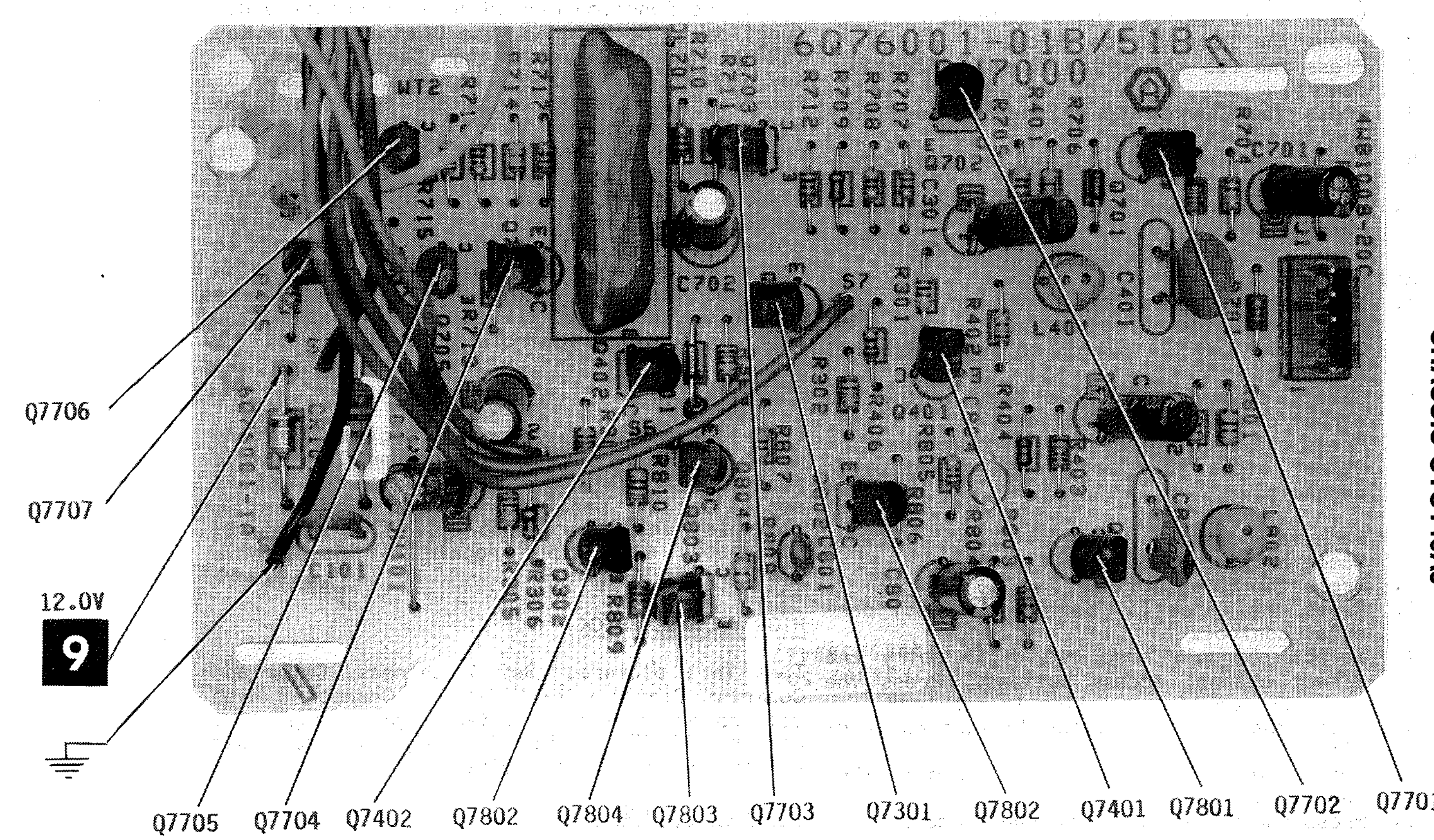
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VOLTAGE BOARD

FRONT CONTROL PANEL MFP1-GridTrace LOCATION GUIDE

C3401	A-1	D3403	A-8	R3402	A-1	R3414	B-4	R3428	A-4
C3402	A-2	D3404	A-7	R3403	A-2	R3415	B-2	R3429	B-2
C3403	B-2	D3405	A-6	R3404	A-2	R3416	A-7	R3430	B-2
C3404	A-2	D3406	A-5	R3405	A-2	R3417	A-8	SW3401	B-15
C3406	B-3	D3408	B-2	R3406	A-1	R3418	A-7	SW3402	A-14
C3407	A-3	D3409	B-2	R3407	A-2	R3419	A-7	SW3403	A-13
C3408	B-3	L3401	A-3	R3408	B-2	R3420	A-6	SW3404	A-12
C3409	B-4	Q3401	A-2	R3409	A-2	R3421	A-7	SW3405	A-12
C3410	B-1	Q3402	A-2	R3410	B-3	R3422	A-5	SW3406	A-11
C3411	B-2	Q3403	A-3	R3411	A-3	R3423	A-6	SW3407	A-10
D3401	A-2	Q3404	A-3	R3412	A-4	R3426	A-4	SW3408	A-9
D3402	A-1	R3401	B-1	R3413	A-4	R3427	A-4		





RCA
CHASSIS CTC140AJ

MISCELLANEOUS ADJUSTMENTS

PRETUNE

Auto Program
1. Connect antenna for channel reception.
2. Momentarily depress the TV button on remote transmitter.
3. Press the Setup button on remote transmitter
4. Press the Four (4) button to start process.
5. Press the Plus (+) button to start process.

Erase Channel
1. Momentarily depress the TV button.
2. Press the Setup button twice.
3. Press the Two (2) button to select channel memory.
4. Press the Channel Up or Channel Down button to select channel.
5. Press the Minus (-) button to erase channel.
6. Repeat steps four and five to erase other channels.

Add Channel
1. Momentarily depress the TV button.
2. Press the Setup button twice.
3. Press the Two (2) button to select channel memory.
4. Select channel. Use two digit entry and direct channel access buttons.
5. Press the Plus (+) button to add channel.
6. Repeat steps four and five to add other channels.

Set Parental Control.
1. Momentarily depress the TV button.
2. Press the Setup button.
3. Press the Three (3) button to select parental control.
4. Select channel. Use two digit entry and direct channel access buttons. Press the Clear button if correction is required.
5. Press the Plus (+) button to turn on function.
6. Repeat steps four and five to block other channels.
7. Press the Setup button to end process.

Note: To remove block repeat steps two and three, press the Clear button and press the Setup button.

Set Clock
1. Momentarily depress the TV button.
2. Press the Setup button twice.
3. Press the One (1) button to select clock set.
4. Enter the time. Press the Clear button if correction is required.
5. Select AM or PM by pressing the One (1) or Two (2) button.
6. Press the Setup button to end process.

Setting On/Off Alarm
1. Momentarily depress the TV button.
2. Press the Setup button.
3. Press the two (2) button to select alarm set.

Note: Clock must be set before alarm can function.

4. Enter time for set to turn on.
5. Press the One (1) or Two (2) button to select AM or PM.
6. Enter time for set to turn off.
7. Press the One (1) or Two (2) button to select AM or PM.
8. Select channel. Use two digit entry and direct channel access button.
9. Press the Plus (+) button to activate alarm.
10. Press the Setup button to end process.

This set employs Digital Customer Controls. Use Video Function Key (SW406) to select video function to be altered, use Channel Up / + Key (SW404) to increase setting, Channel Down / - Key (SW405) to decrease setting. Use Set Up Function Key (SW408) to select function to be altered, use Channel Up / + Key SW404 to increase setting, Channel Down / - Key SW405 to decrease setting. Use Audio Function Key (SW407) to select audio function to be altered, use Channel Up / + Key SW404 to increase setting, Channel Down / - Key SW405 to decrease setting. These functions may also be accessed from the remote transmitter. Unless otherwise specified all adjustments were made with the function controls at RESET values.

B+ CHECK

Tune in a picture. Connect a digital DC Voltmeter to TP4058 low side to ground. B+ should read 130 ±1V DC. Note the adjustment R4106 is sealed by the manufacturer, no adjustment is possible, instead replace out of tolerance B+ components with vipur repair kit (see parts list).

HIGH VOLTAGE CHECK

Tune in a picture. Set Brightness, Color and Contrast Controls to MINIMUM. Connect a high voltage probe to CRT anode. High voltage must measure 27.5KV to 32.0KV. High voltage must not exceed the higher value.

RF AGC ADJUSTMENT

Tune in a picture. Adjust RF AGC Delay Control (R2315) clockwise until snow (noise) appears in picture and then counterclockwise until snow disappears. Check all channels for proper operation.

DC LEVEL ADJUSTMENT

Tune in a color bar pattern. Connect a digital DC Voltmeter to TP2332 (Wiper or R2332) low side to ground. Adjust DC Level Control (R2332) for 1.75V DC.

VIDEO GAIN ADJUSTMENT

Tune in a color bar pattern. Connect an oscilloscope to JW2503, low side to ground. Adjust Video Gain Control (R2327) for 2.0V p-p.

CONTRAST PRESET ADJUSTMENT

Tune in a color bar pattern. Connect an oscilloscope to JT2701, low side to ground. Adjust Contrast Preset Control (R2610) for 400mV p-p level of the chroma portion of waveform.

MISCELLANEOUS ADJUSTMENTS (CONTINUED)

COMB FILTER ADJUSTMENT

Tune in a color bar pattern. Connect an oscilloscope to JT2701, low side to ground. Adjust Chroma Null (R2604) and Comb Delay (L2602) for MINIMUM chroma components of waveform.

CHROMA OSCILLATOR ADJUSTMENT

Tune in a color bar pattern. Connect a digital DC Voltmeter to TP2807, low side to ground. Adjust Chroma Oscillator Control (R2804) for 5.0V DC ±0.1V DC.

SHARPNESS SETUP ADJUSTMENT

Tune in a color bar pattern. Set Sharpness to Maximum. Connect an oscilloscope to TP2737 (IC2700 pin 37) low side to ground. Adjust Sharpness Setup (Preset) Control (R2722) for 300mV p-p of chroma component of waveform.

VERTICAL HEIGHT ADJUSTMENT

Tune in a picture. Adjust Vertical Height Control (R4502) until picture extends approximately 1/8" past top and bottom edges of screen.

HORIZONTAL FREQUENCY ADJUSTMENT

Tune in a color bar pattern. Connect a jumper between TP4300 and ground. Adjust Horizontal Frequency Coil (L4300) until picture stands straight and stops or slowly floats across the screen. Remove jumper.

HORIZONTAL CENTERING ADJUSTMENT

Tune in a crosshatch pattern. Set Horizontal Centering Control (R4400) to the center of its range. Adjust Horizontal Centering Switch (RS4400) for the best horizontal centering. Fine tune horizontal centering with Horizontal Centering Control.

HORIZONTAL WIDTH ADJUSTMENT

Tune in a crosshatch pattern. Adjust Width EW Side Control (R4802) for approximately 1/8" overscan right and left sides of screen.

PINCUSHION ADJUSTMENTS

Tune in a crosshatch pattern. Adjust E/W Pin Control (R4806) for straight vertical lines at the right and left sides of screen. Set N/S Amp Control (R4814) fully counterclockwise. Adjust Pin Phase (L4802) for symmetrical distortion of horizontal lines at the top of the screen. Adjust Gull Wing Control (L4803) for symmetrical horizontal lines at the top and bottom of screen. Adjust N/S Pin Adjust for straight horizontal lines.

DISPLAY POSITION ADJUSTMENT

Tune in a picture. Obtain a channel number display. Adjust OSD Oscillator (L3301) to place channel numbers 2" from right side of screen.

EIA SYNC ADJUSTMENT

Tune in a color bar pattern. Connect a digital DC Voltmeter to TP2504 (R2504 wiper) low side to ground. Adjust EIA Sync Control (R2504) for 1.2V DC ±0.05V DC.

BLACK NULL ADJUSTMENT

Tune in a crosshatch pattern. Connect an oscilloscope to TP4904, low side to ground. Adjust Black Null Control (R2925) for 1.3V p-p.

COLOR PURITY ADJUSTMENT

Some sets use a bonded Deflection Yoke, adjustment not recommended. Replace defective Deflection Yoke/CRT assembly. Operate the receiver for 30 minutes. If magnetic tape beam bender is used remove and discard it, order adjustable type beam bender (see parts list). Disconnect internal degaussing coil. Use a degaussing coil to demagnetize the CRT and mounting brackets. Tune in a purity or crosshatch pattern. Adjust Red (R2953), Blue (R2955) Bias Controls to MINIMUM. Set Green (R2954) Bias Control to obtain a green raster (Adjust Brightness and Contrast as necessary). Loosen the Deflection Yoke clamp screw and slide the Deflection Yoke (L4499) backward to obtain a vertical green band. Rotate and spread the tabs of the purity magnets until the green band is centered on the screen. Move the yoke forward until a uniform green screen is obtained. Check red and blue purity.

SERVICE LINE PROCEDURE

Turn set On. Remove power. Press and hold Set Up Key (SW408), restore power, hold Set Up Key for 5 seconds. To remove service line press any key, then turn power On.

COLOR TEMPERATURE ADJUSTMENT (B/W TRACKING

Tune in a picture. Set Color, Brightness and Contrast Controls to MINIMUM. Set Red (R2953), Green (R2954), and Blue (R2955) Bias Controls to MINIMUM. Set Red (R2950), Blue (R2952) and Green (R2951) Drive Controls to Maximum. Set Screen Control (R4404B) to MINIMUM. Obtain a service line. Advance screen control so that a horizontal line is just visible. Adjust 2 Bias controls to obtain a dim white line. Remove service line. Set Brightness and Contrast Controls to Maximum. Adjust the Blue, Red and Green Drive Controls for best Black and White picture. Check tracking at low and high brightness.

CONVERGENCE ADJUSTMENTS

Note: Some sets use a bonded Deflection Yoke (L4599), adjustment not recommended. Replace defective Deflection Yoke/CRT assembly. If magnetic tape beam bender is used remove and discard it. Order adjustable type beam bender (see parts list). Operate the receiver for 20 minutes. Connect a color bar generator to the

TROUBLESHOOTING AID

Note: Waveforms taken with triggered scope, Keyed-Rainbow generator. Schematic voltages measured with digital meter, no signal. Controls adjusted for normal operation.

PICTURE or SOUND

NO PIC, NO SOUND, NO RASTER: Check AC power supply and sources generated from Horizontal Output Transformer (T4400). Refer to "Troubleshooting" Power Supply and Horizontal circuits.

NO PIC, NO SOUND, HAS RASTER: Check IF-AGC and source voltages from Horizontal Output Transformer (T4400). Refer to "Troubleshooting" IF-AGC and Horizontal circuits.

NO PIC, HAS SOUND, NO RASTER: Check Horizontal Output Transformer (T4400) sources and Video circuit. Refer to "Troubleshooting" Horizontal and Video circuits.

NO PIC, HAS SOUND, HAS RASTER: Refer to "Troubleshooting" Video circuit.

HAS PIC, NO SOUND: Refer to "Troubleshooting" Audio circuit.

OVERLOADED PICTURE: Refer to "Troubleshooting" IF-AGC circuit.

LOW OR EXCESSIVE BRIGHTNESS: Check Video and Luminance circuits. Refer to "Troubleshooting" Video circuit.

SWEEP

NO RASTER, HAS SOUND: Check HV rectifier, Part of Horizontal Output Transformer (T4400). Refer to "Troubleshooting" Horizontal circuit.

NO RASTER, NO SOUND: Refer to "Troubleshooting" Horizontal circuit.

NO VERT DEFLECTION: Refer to "Troubleshooting" Vertical circuit.

POOR VERT LIN OR FOLDOVER: Refer to "Troubleshooting" Vertical circuit.

POOR HORIZ LIN OR FOLDOVER: Refer to "Troubleshooting" Horizontal circuit.

NARROW PICTURE: Refer to "Troubleshooting" Horizontal circuit.

VERT OFF FREQUENCY: Refer to "Troubleshooting" Vertical circuit.

HORIZ OFF FREQUENCY: Refer to "Troubleshooting" Horizontal circuit.

SYNC

NO VERT/HORIZ SYNC: Refer to "Troubleshooting" Sync circuit.

RASTER

YELLOW (NO BLUE): Check Chroma and Blue Output circuits. Refer to "Troubleshooting" Raster circuit.

CYAN (NO RED): Check Chroma and Red Output circuits. Refer to "Troubleshooting" Raster circuit.

MAGENTA (NO GREEN): Check Chroma and Green Output circuits. Refer to "Troubleshooting" Raster circuit.

COLOR (B/W operating normally)

NO COLOR: Refer to "Troubleshooting" Chroma circuit.

WEAK COLOR: Refer to "Troubleshooting" Chroma circuit.

NO COLOR SYNC: Refer to "Troubleshooting" Chroma circuit.

NO GREEN: Check Chroma and Green Output circuits. Refer to "Troubleshooting" Raster circuit.

NO BLUE: Check Chroma and Blue Output circuits. Refer to "Troubleshooting" Raster circuit.

NO RED: Check Chroma and Red Output circuits. Refer to "Troubleshooting" Raster circuit.

INCORRECT HUE (TINT): Refer to "Troubleshooting" Chroma circuit.

PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	TCE PART No.	NOTES
AUDIO/VIDEO BOARD					
CR6201	164874	NTE177	ECG177	SK9091/177	
CR6202 THRU CR6209	179737				
Q6102,4,7	179740	NTE2406	ECG2406		
Q6201,2	179740	NTE2406	ECG2406		
U6101	161079	NTE4052B	ECG4052B	SK4052B	
U6201	181165				
CRT BOARD					
CR5001 THRU CR5006	164717	NTE519	ECG519	SK3100/519	
Q5001,2,3	146826	NTE171	ECG171	SK3201/171	
Q5004,5,6	189988				
Q5007,8,9	146851	NTE287	ECG287	SK3433/287	
DIODE BOARD					
CR4701,2,3	164589	NTE558	ECG558	SK3998/558	
FRONT CONTROL PANEL BOARD					
CR3401	164874	NTE177	ECG177	SK9091/177	
CR3402	181239				
CR3403	175393				
CR3404	175394				
CR3405	175393				
CR3406	175394				
CR3408,9	164874	NTE177	ECG177	SK9091/177	
Q3401	179744				
Q3402	145410	NTE159	ECG159	SK3466/159	
Q3403,4	148061	NTE123AP	ECG123AP	SK3854/123AP	
MAIN BOARD					
CR1100	176746	NTE5011A	ECG5011A	SK5A6/5011A	
CR1805	164717	NTE519	ECG519	SK3100/519	
CR2100	146846	NTE5021A	ECG5021A	SK12A/5021A	
CR2101	164717	NTE519	ECG519	SK3100/519	
CR2300	149042	NTE139A	ECG139A	SK9V1/139A	
CR2301	164717	NTE519	ECG519	SK3100/519	
CR2401	164717	NTE519	ECG519	SK3100/519	
CR2402	157301	NTE177	ECG177	SK9091/177	#
CR2501	139706	NTE177	ECG177	SK9091/177	
CR2701	164717	NTE519	ECG519	SK3100/519	
CR2702	147015	NTE125	ECG125	SK5010A/117A	
CR2704	164874	NTE177	ECG177	SK9091/177	
CR3102	164874	NTE177	ECG177	SK9091/177	
CR3201	129938	NTE137A	ECG137A	SK6V2/137A	
CR3301	164874	NTE177	ECG177	SK9091/177	
CR3303	182827	NTE5010A	ECG5010A	SK5A1/5010A	
CR3601	164591	NTE135A	ECG135A	SK5V1/135A	
CR4001 THRU CR4004	147015	NTE125	ECG125	SK5010A/117A	
CR4101	141873	NTE5021A	ECG5021A	SK12A/5021A	
CR4102	164717	NTE519	ECG519	SK3100/519	
CR4103	156468	NTE145A	ECG145A	SK15V/145A	
CR4104	164588	NTE519	ECG519	SK3100/519	
CR4106	164717	NTE519	ECG519	SK3100/519	

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

RESISTORS (Power and Special)

	ITEM No.	RATING	REPLACEMENT DATA MFGR. PART No.	NTE PART No.	
		PW 6000C			
		AUDIO/VIDEO SIP			
	R6223	11K 2% 1/8W Chip Metal Film	181057		
	R6225	2200 2% 1/8W Chip Metal Film	181079		
		FRONT CONTROL PANEL MFP1			
	R3426	LDR	157923		
		KINE SOCKET PW5000A			
#	R5001	100 5% 1/2W Flameproof Carbon Film	830110	HW110	
#	R5007	2700 10% 1/2W Carbon Comp	190043	HW227	
#	R5008	10K 5% 3W Flameproof Metal Film	189989	3W310	
#	R5009	10K 5% 3W Flameproof Metal Film	189989	3W310	
#	R5010	10K 5% 3W Flameproof Metal Film	189989	3W310	
#	R5012	100 5% 1/4W Carbon Film	175325	QW110	
#	R5022	2.7 5% 3W WW	175333		
		MAIN BOARD CTC140AJ			
	R1101	5100 2% 1/8W Chip Metal Film	175418		
	R1102	15 5% 1/8W Chip Metal Film	830015	HW015	
	R1601	11K 2% 1/8W Chip Metal Film	178277		
	R1606	13K 2% 1/8W Carbon Film	157334	EW313	
	R1608	9100 2% 1/8W Chip Metal Film	181059		
	R1610	16K 2% 1/8W Chip Metal Film	181060		
	R1611	8200 2% 1/8W Chip Metal Film	181065		
	R1618	6200 2% 1/8W Chip Metal Film	181058		
	R1624	5100 2% 1/8W Chip Metal Film	175418		
	R1629	12K2% 1/8W Chip Metal Film	174365		
	R1630	3300 2% 1/8W Chip Metal Film	181080		
	R1635	160K 2% 1/8W Chip Metal Film	176815		
	R1649	9100 2% 1/8W Chip Metal Film	181059		
	R1651	12K 2% 1/8W Chip Metal Film	174365		
	R1658	13K 2% 1/8W Chip Metal Film	178285		
	R1659	1100 2% 1/8W Chip Metal Film	181057		
	R1816	3300 2% 1/8W Chip Metal Film	181080		
	R1817	3300 2% 1/8W Chip Metal Film	181080		
	R1900	2200 2% 1/8W Chip Metal Film	181079		
#	R1901	2 5% 1S Flameproof Metal Film	831A20	1W2D0	
#	R1902	2 5% 1W Flameproof Metal Film	831A20	1W2D0	
#	R1903	8.2 5% 1/2W Flameproof Carbon Film	120595	HW8D2	
#	R1908	8.2 5% 1/2W Flameproof Carbon Film	120595	HW8D2	
#	R2100	18 5% 3W Flameproof Metal Film	181234	3W018	
	R2101	4.7 5% 2W Flameproof Metal Film	181104	2W4D7	
	R2201	100 1% 1/4W Metal Film	193569		
	R2202	100 1% 1/4W Metal Film	193569		
	R2203	100 1% 1/4W Metal Film	193569		
	R2304	100 5% 1/4W Flameproof Carbon Film	829110	QW110	
	R2307	680 2% 1/8W Chip Metal Film	178286	EW168	
	R2312	6200 2% 1/8W Chip Metal Film	181058		
	R2317	24 2% 1W Flameproof Metal Film	831024	1W024	
	R2401	1500 2% 1/4W Carbon Film	175367	QW215	
	R2402	5100 2% 1/8W Chip Metal Film	175418		
	R2403	3300 2% 1/8W Chip Metal Film	181080		
	R2404	11K 2% 1/8W Chip Metal Film	178277		
	R252	51K 2% 1/8W Chip Metal Film	181062		
	R2511	2200 2% 1/8W Chip Metal Film	181079		
	R2515	6200 2% 1/8W Chip Metal Film	181058		
	R2601	680 2% 1/8W Chip Metal Film	178286		
		470 2% 1/8W Chip Metal Film	182628		
	R2602	1100 2% 1/8W Chip Metal Film	181057		
	R2603	8200 2% 1/8W Chip Metal Film	181065		
	R2609	750 2% 1/8W Chip Metal Film	181056		
	R2613	13K 2% 1/8W Chip Metal Film	178285		

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

RESISTORS (Power and Special)

	ITEM No.	RATING	REPLACEMENT DATA MFGR. PART No.	NTE PART No.	
	R2614	1300 2% 1/8W Chip Metal Film	182823		
		1800 2% 1/8W Chip Metal Film	181484		
	R2616	16K 2% 1/8W Chip Metal Film	181060		
	R2619	220 2% 1/8W Chip Metal Film	181492		
	R2701	6200 2% 1/8W Chip Metal Film	181058		
	R2703	9100 2% 1/8W Chip Metal Film	181059		
	R2704	2200 2% 1/8W Chip Metal Film	181079		
	R2710	680 2% 1/8W Chip Metal Film	178286		
	R2716	3300 2% 1/8W Chip Metal Film	181080		
	R2721	6200 2% 1/8W Carbon Film	161390	EW262	
	R2723	6200 2% 1/8W Chip Metal Film	181058		
	R2724	6200 2% 1/8W Chip Metal Film	181058		
	R2725	160K 2% 1/8W Chip Metal Film	176815		
	R2726	51K 2% 1/8W Chip Metal Film	181062		
	R2801	680 2% 1/8W Chip Metal Film	178286		
	R2802	2200 2% 1/8W Chip Metal Film	181079		
	R2806	3300 2% 1/8W Chip Metal Film	181080		
	R2807	2700 2% 1/8W Chip Metal Film	181064		
	R2809	680 2% 1/8W Chip Metal Film	178286		
	R2812	680 2% 1/8W Chip Metal Film	178286		
	R2813	750 2% 1/8W Chip Metal Film	181056		
	R2815	51K 2% 1/8W Chip Metal Film	181062		
	R2820	750 2% 1/8W Chip Metal Film	181056		
	R2913	2400 2% 1/8W Chip Metal Film	192829		
	R2914	2400 2% 1/8W Chip Metal Film	192829		
		2000 2% 1/8W Chip Metal Film			
	R2915	2400 2% 1/8W Chip Metal Film	192829		
		2000 2% 1/8W Chip Metal Film			
	R2919	680 2% 1/8W Chip Metal Film	178286		
	R2920	680 2% 1/8W Chip Metal Film	178286		
	R2921	680 2% 1/8W Chip Metal Film	178286		
	R3330	16K 2% 1/8W Chip Metal Film	181060		
	R3333	13K 2% 1/8W Chip Metal Film	178285		
	R3340	12K 2% 1/8W Chip Metal Film	174365		
	R3341	2200 2% 1/8W Chip Metal Film	181079		
	R3344	51K 2% 1/8W Chip Metal Film	181062		
	R3348	24K 2% 1/8W Chip Metal Film	181061		
	R3349	11K 2% 1/8W Chip Metal Film	178277		
	R3351	3300 2% 1/8W Chip Metal Film	181080		
	R3362	1000 2% 1/8W Carbon Film	161223	EW210	
	R3601	82 5% 1W Flameproof Metal Film	181232	1W082	
	R3606	3300 2% 1/8W Chip Metal Film	181080		
#	R4001	1.8M 1% 1/2W Carbon Comp	179996	HW518	
#	R4002	8.2M 5% 1/2W Carbon Comp 1/2W	179997	HW582	
#	R4003	2.7 10% 22W WW	139339		
#	R4004	68K 5% 1W Flameproof Metal Film	179784	1W368	
	R4101	2200 5% 5W Flameproof Metal Film	177742	5W222	
#	R4103	16.5K 1% 1/4W Metal Film	180429		
#	R4104	15.8K 1% 1/4W Metal Film	181121		
#	R4105	6650 1% 1/4W Metal Film	181123		
#	R4111	.15 5% 3W WW	181117		
	R4112	62K 2% 1/4W Carbon Film	176649	QW362	
#	R4115	22 5% 3W WW	181118		
	R4304	51K 2% 1/8W Chip Metal Film	181062	EW351	
	R4311	16K 2% 1/4W Carbon Film	175329	QW316	
	R4316	510 2% 1/4W Carbon Film	175307	QW151	
	R4317	1200 2% 1/4W Carbon Film	175308	QW212	
	R4321	3900 5% 1W Flameproof Metal Film	179783	1W239	
#	R4322	3600 5% 3W Flammeproof Metal Film	181236	3W236	
	R4324	2700 2% 1/8W Chip Metal Film	181064		
	R4500	24K 2% 1/4W Carbon Film	190008	QW324	
	R4507	1 5% 1W Flameproof Metal Film	176889	1W1D0	
		1.1 5% 1W Flameproof Metal Film	190018	1W1D1	
	R4512	620K 2% 1/8W Carbon Film	181097	EW462	
		680K 2% 1/8W Carbon Film	182830	EW468	
	R4515	11K 2% 1/8W Chip Metal Film	178277		
	R4700	220 5% 2W Flameproof Metal Film	175310	2W122	
	R4701	4700 5% 1W Flameproof Metal Film	181233	1W247	

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	TCE PART No.	NOTES
CR4201	164717	NTE519	ECG519	SK3100/519	#
CR4202	147015	NTE125	ECG125	SK5010A/117A	
CR4400	146316	NTE525	ECG525	SK3925/525	
CR4401,2	176296	NTE552	ECG552	SK9000/552	
CR4500	147015	NTE125	ECG125	SK5010A/117A	
CR4501	164717	NTE519	ECG519	SK3100/519	
CR4600	164717	NTE519	ECG519	SK3100/519	
CR4650,1	147015	NTE125	ECG125	SK5010A/117A	
CR4652	141873	NTE5021A	ECG5021A	SK12A/5021A	
CR4653	150363	NTE142A	ECG142A	SK12V/142A	
CR4654,5	147015	NTE125	ECG125	SK5010A/117A	
CR4656	157832	NTE5011A	ECG5011A	SK5A6/5011A	
CR4657,8	147015	NTE125	ECG125	SK5010A/117A	
CR4659	164874	NTE177	ECG177	SK9091/177	
CR4705,6	176296	NTE552	ECG552	SK9000/552	
CR4900	157301	NTE177	ECG177	SK9091/177	#
CR4901	175341	NTE5019A	ECG5019A	SK10A/5019A	#
Q1100	146849	NTE210	ECG210	SK3202/210	
Q1101	139366	NTE340	ECG340	SK3452/108	
Q1600	139366	NTE340	ECG340	SK3452/108	
Q1802,3	179740	NTE2406	ECG2406		
Q1804,5	179741	NTE2407	ECG2407		
Q1900	179740	NTE2406	ECG2406		
Q2100	146849	NTE210	ECG210	SK3202/210	
Q2300	146848	NTE229	ECG229	SK3246A/229	
Q2302	179740	NTE2406	ECG2406		
Q2303	146847	NTE123AP	ECG123AP	SK3854/123AP	
Q2401	179740	NTE2406	ECG2406		
Q2402	151263	NTE159	ECG159	SK3466/159	
Q2501	179740	NTE2406	ECG2406		
Q2502	179741	NTE2407	ECG2407		
Q2506,7	179740	NTE2406	ECG2406		
Q2601	179740	NTE2406	ECG2406		
Q2602	179741	NTE2407	ECG2407		
Q2701	179740	NTE2406	ECG2406		
Q2702	179741	NTE2407	ECG2407		
Q2703	146850	NTE159	ECG159	SK3466/159	
Q2800	179740	NTE2406	ECG2406		
Q2901,2,3	179740	NTE2406	ECG2406		
Q2904 THRU Q2907	179741	NTE2407	ECG2407		
Q2908	179740	NTE2406	ECG2406		
Q3102 THRU Q3104	179740	NTE2406	ECG2406		
Q3106,7,8	179740	NTE2406	ECG2406		
Q3111	179741	NTE2407	ECG2407		
Q3112,3	179740	NTE2406	ECG2406		
Q3301	179741	NTE2407	ECG2407		
Q3303	146847	NTE123AP	ECG123AP	SK3854/123AP	
Q3701	179741	NTE2407	ECG2407		
Q3702	179740	NTE2406	ECG2406		
Q3703	157833	NTE123AP	ECG123AP	SK3854/123AP	

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	TCE PART No.	NOTES
Q4100	164599				#
Q4201	148907	NTE123AP	ECG123AP	SK3854/123AP	
Q4300	153677	NTE255	ECG255	SK9412/255	
Q4301	146847	NTE123AP	ECG123AP	SK3854/123AP	
Q4400	179743	NTE2300	ECG2300	SK9476/2300	
Q4500	143804	NTE123AP	ECG123AP	SK3854/123AP	
Q4501	142839	NTE159	ECG159	SK3466/159	
Q4600	156372				
Q4650	146849	NTE210	ECG210	SK3202/210	
Q4653	146849	NTE210	ECG210	SK3202/210	
Q4654	151974	NTE159	ECG159	SK3466/159	
Q4900	147665	NTE159	ECG159	SK3466/159	#
U1600	176223				
U1601	176224				
U1800	176226	NTE1576	ECG1576	SK7672/1576	
U1900	192105				
	179726				USED SOME VERSIONS
U2300	179728				
U2600	179729				
U2700	179730				
U3100	189999				
U3200	192113				
U3300	189998				
U3600	179733				
U4100	179901				
U4300	159433	NTE1739	ECG1739		#
U4500	176853	NTE1797	ECG1797	SK9753	
PINCUSHION BOARD					
CR4801	161081	NTE5011T1	ECG5011T1		
CR4802	164589	NTE558	ECG558	SK3998/558	
Q4801,2	142839	NTE159	ECG159	SK3466/159	
Q4803	143804	NTE123AP	ECG123AP	SK3854/123AP	
Q4804	160085	NTE152	ECG152	SK3893/152	
REMOTE TRANSMITTER					
Q1	148996	NTE123AP	ECG123AP	SK3854/123AP	
U1	181018				
S-VHS BOARD					
CR7101	141873	NTE5021A	ECG5021A	SK12A/5021A	
CR7301	164717	NTE519	ECG519	SK3100/519	
Q7301,2	146847	NTE123AP	ECG123AP	SK3854/123AP	
Q7401,2	146847	NTE123AP	ECG123AP	SK3854/123AP	
Q7701,2,3	146847	NTE123AP	ECG123AP	SK3854/123AP	
Q7704	143806	NTE159	ECG159	SK3466/159	
Q7705,6,7	146847	NTE123AP	ECG123AP	SK3854/123AP	
Q7801	146847	NTE123AP	ECG123AP	SK3854/123AP	
Q7802	143806	NTE159	ECG159	SK3466/159	
Q7803,4	146847	NTE123AP	ECG123AP	SK3854/123AP	

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM NO.	FUNCTION	RESISTANCE	MFGR. PART NO.	NOTES
	KINE BIAS SIP			
	PW2900			
R2950A (R2950)	Red Drive	1500	181176	
R2951A (R2951)	Green Drive	1500	181176	
R2952A R2952	Blue Drive	1500	181176	
R2953	Red Bias	1000	181405	
R2954	Green Bias	1000	181405	
R2955	Blue Bias	1000	181405	
R4400	Horiz Centering	1000	175435	
R4502	Vert Height	300	181177	
	MAIN BOARD			
	CTC140 AJ			
R1607	MPX VCO Adjust	5000	181113	
R1619	SAP VCO Adjust	5000	181113	
R1627	DBX Input Level Adjust	20K	191389	
R1644	High Band Level Match	2000	181109	
R1648	DBX Output Level	10K	181107	
R2315	RF AGC Delay	10K	181114	
R2327	Video Gain	1000	181106	
R2332	DC Level	100	181105	
R2504	EIA Sync	100K	181108	
R2509	EIA Audio Level	5000	181113	
R2604	Chroma Null	500	181112	
			181109	
R2601	Contrast Set Up	2000	181109	
R2722	Sharpness Setup (Preset)	3000	181111	
R2804	Chroma OSC	1000	181106	
R2925	Black Null	2000	181109	
# R4404	Focus/Screen		182828	
	PW PIN SIP			
	PW 4800A			
R4802	Width (Width EW Side)	1000	181405	
R4806	SW Pin Adjust (EW Side Pin Adj)	7500	181406	
R4814	N/S Pin Adjust	2500	181407	

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA MFGR. PART No.	NTE PART No.	
	ADT-4 TUNING SYSTEM			
# R1	3.9M 10T 1/2W Carbon Comp	182473	HW539	
R3	33K 2% 1/8W Chip Metal Film	176813		
R4	56K 2% 1/8W Chip Metal Film	181480		
R5	270 2% 1/8W Chip Metal Film	181481		
R6	1500 2% 1/8W Chip Metal Film	181482		
R7	1500 2% 1/8W Chip Metal Film	181482		
R8	3600 2% 1/8W Chip Metal Film	181473		
R9	180 2% 1/8W Chip Metal Film	181484		
R11	10K 2% 1/8W Chip Metal Film	174364		
R12	120 2% 1/8W Chip Metal Film	181485		
R13	100 2% 1/8W Chip Metal Film	181486		

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA MFGR. PART No.	NTE PART No.	
R14	4700 2% 1/8W Chip Metal Film	178287		
R20	100 2% 1/8W Chip Metal Film	181486		
R21	270 2% 1/8W Chip Metal Film	181481		
R23	1800 2% 1/8W Chip Metal Film	181484		
R24	330 2% 1/8W Chip Metal Film	181488		
R26	120 2% 1/8W Chip Metal Film	181485		
R35	100K 2% 1/8W Chip Metal Film	176816		
R42	120 2% 1/8W Chip Metal Film	181485		
R43	1800 2% 1/8W Chip Metal Film	181484		
R44	910 2% 1/8W Chip Metal Film	182627		
	820 2% 1/8W Chip Metal Film	176814		
R45	330 2% 1/8W Chip Metal Film	181488		
R48	6800 2% 1/8W Chip Metal Film	178281		
R49	3300 2% 1/8W Chip Metal Film	181080		
R54	180K 2% 1/8W Chip Metal Film	181489		
R55	220K 2% 1/8W Chip Metal Film	181490		
R56	220K 2% 1/8W Chip Metal Film	181490		
R57	180 2% 1/8W Chip Metal Film	181491		
R58	300 2% 1/8W Chip Metal Film	181055		
R60	100K 2% 1/8W Chip Metal Film	176816		
R61	56K 2% 1/8W Chip Metal Film	181480		
R64	1500 2% 1/8W Chip Metal Film	181482		
R65	270 2% 1/8W Chip Metal Film	181481		
R68	220 2% 1/8W Chip Metal Film	181492		
R69	2200 2% 1/8W Chip Metal Film	181079		
R70	4700 2% 1/8W Chip Metal Film	178287		
R72	100 2% 1/8W Chip Metal Film	181486		
R73	470 2% 1/8W Chip Metal Film	182628		
	620 2% 1/8W Chip Metal Film	181493		
R74	82K 2% 1/8W Chip Metal Film	181494		
R78	120 2% 1/8W Chip Metal Film	181485		
R100	100K 2% 1/8W Chp Metal Film	176816		
R101	100K 2% 1/8W Chip Metal Film	176816		
R102	100K 2% 1/8W Chip Metal Film	176816		
R105	390 2% 1/8W Chip Metal Film	178184		
R107	120 2% 1/8W Chip Metal Film	181485		
# R319	100K 5% 1/8W Chip Metal Film	176816		
# R320	100K 5% 1/8W Chip Metal Film	176816		
# R321	100K 5% 1/8W Chip Metal Film	176816		
	TCCQ-1A U/V TUNER			
R43	1800 2% 1/8W Chip Metal Film	181484		
R44	820 2% 1/10W Chip Metal Film	192088		
R45	220 2% 1/10W Chip Metal Film	192089		
R54	180K 2% 1/10W Chip Metal Film	192092		
R55	220K 2% 1/10W Chip Metal Film	192093		
R56	220K 2% 1/10W Chip Metal Film	192093		
R58	300 2% 1/8W Chip Metal Film	181055		
R60	100K 2% 1/10W Chip Metal Film	192094		
R61	56K 2% 1/10W Chip Metal Film	192095		
R64	1500 2% 1/8W Chip Metal Film	181482		
R65	270 2% 1/8W Chip Metal Film	181481		
R68	220 2% 1/10W Chip Metal Film	192089		
R69	2200 2% 1/10W Chip Metal Film	192096		
R70	4700 2% 1/10W Chip Metal Film	192097		
R72	100 2% 1/10W Chip Metal Film	192099		
R100	100K 2% 1/10W Chip Metal Film	192094		
R101	100K 2% 1/10W Chip Metal Film	192094		
R102	100K 2% 1/10W Chip Metal Film	192094		
R105	390 2% 1/10W Chip Metal Film	192102		
R107	120 2% 1/8W Chip Metal Film	181485		
# R701	3.9M 5% 1/2W Carbon Comp	182843	HW539	

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	TCE PART No.	NOTES
U/V TUNER					
CR1	181465				MATCHED SET INCULDES CR2,3,4
CR2,3,4					USE CR1 MATCHED SET
CR5	181466				
CR6	181467				MATCHED SET INCULDES CR9,10, 12,15,16,17, 24,26
CR7,8	181466				
CR9 THRU CR12					USE CR6 MATCHED SET
CR13,14	181466				
CR15,16,17					USE CR6 MATCHED SET
CR18,19	181466				
CR22,23	181466				
CR24					USE CR6 MATCHED SET
CR25	181466				
CR26					USE CR6 MATCHED SET
CR27	119662	NTE112	ECG112	SK3089/112	
	185147				
CR28	181466				
CR301	181466				
CR302	181468				
CR303	174378				
CR304	181468				
CR305	181466				
CR306	174378				
CR307	181466				
CR308	181468				
CR309	174378				
Q1	181475				
Q2,3	181476				
Q4,5	181477				
Q6	181476				
Q7	181478				
Q8	181476				
Q9	179741	NTE2407	ECG2407		
Q301	179741	NTE2407	ECG2407		
Q302	181479				
Q303	179741	NTE2407	ECG2407		
Q304,5	181479				
U1	181498				
VLT BOARD					
Q2970,71	146847	NTE123AP	ECG123AP	SK3854/123AP	
Q2972	145410	NTE159	ECG159	SK3466/159	
Q2973	146847	NTE123AP	ECG123AP	SK3854/123AP	

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	TCE PART No.	NOTES
U/V TUNER TCCQ-1A					
CR5	129095	NTE553	ECG553	SK3322	
CR6	192062				MATCHED SET INCULDES CR9,10, 12,15,16,17, 24,26
CR7,8	181466				
CR9,10					USE CR6 MATCHED SET
CR11	129095	NTE553	ECG553	SK3322	
CR12					USE CR6 MATCHED SET
CR13	181466				
CR14	129095	NTE553	ECG553	SK3322	
CR15,6,7					USE CR6 MATCHED SET
CR18,9	129095	NTE553	ECG553	SK3322	
CR22,3	129095	NTE553	ECG553	SK3322	
CR24					USE CR6 MATCHED SET
CR25	181466				
CR26					USE CR6 MATCHED SET
CR29	181466				
CR101,2,3,4	192063				MATCHED SET
CR105	192064				
Q4,5	192066				
Q6	192067				
Q7	192068				
Q8	192067				
Q9	179741	NTE2407	ECG2407		
Q101	192069				
Q102	192067				
U1	181498				

For SAFETY use only equivalent replacement part.

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

MISCELLANEOUS

	ITEM No.	PART NAME	MFGR. PART No.	NOTES
		CHASSIS		
#	V101	CRT	AG8ACC14X01	
		CTC 140 AJ/AD		
		MAIN BOARD		
	BPF 2300	Filter	181136	
#	C4001	Capristor	190004	Capacitor/Resistor Combination
	CF2300	Filter	181125	
	DL2600	Delay Line	193568	
	DL2601	Delay Line	179747	
	DL2700	Delay Line	190007	
#	F4001	Fuse	181115	5 Amp @ 250 VAC Slow Blow
	FB1100	Ferrite Bead	154052	
	FB1600	Ferrite Bead	154052	
	FB1602	Ferrite Bead	154052	
	FB2300	Ferrite Bead	152103	
	FB2303	Ferrite Bead	152102	
	FB2304	Ferrite Bead	152102	
	FB2305	Ferrite Bead	152102	
	FB2306	Ferrite Bead	152102	
	FB2307	Ferrite Bead	152102	
	FB2308	Ferrite Bead	152102	
	FB2309	Ferrite Bead	152102	
	FB3101	Ferrite Bead	153328	
	FB3102	Ferrite Bead	153328	
	FB3201	Ferrite Bead	153328	
	FB3301	Ferrite Bead	153328	
	FB3302	Ferrite Bead	153328	
	FB3303	Ferrite Bead	153328	
	FB4100	Ferrite Bead	152103	
	FB4101	Ferrite Bead	152103	
	FB4012	Ferrite Bead	154052	
	FB4200	Ferrite Bead	152103	
	FB4201	Ferrite Bead	152103	
	FB4301	Ferrite Bead	154052	
	FB4400	Ferrite Bead	156475	
	FB4500	Ferrite Bead	154052	
	FL1600	Filter	177053	(50kHz) Low Pass
	FL1601	Filter	177052	Band Pass
	FL1602	Filter	177054	(15kHz) Low Pass
	FL1603	Filter	177054	(15kHz) Low Pass
#	K4200	Relay	164596	
	L4201	Degaussing Coil	193651	
#	P1	Cord	187802	AC Line, Polarized
	SF2300	Filter	158705	
	Y2800	Crystal	161235	(3.58MHz)
	Y3101	Crystal	182839	
		UHF Antenna		
		VHF Antenna		
		KINE BIAS SIP		
	RS4400	Switch	181175	Horiz Cent
		KINE SOCKET PW5000A	— 190019	Board
#	KS5001	Socket	189986	For CRT
		REMOTE TRANSMITTERS		
		CRK45G & CRK50A		
	CR1	Diode	148056	
	CR2	Diode	148056	CRK45G
	Y1	Crystal	157804	

CRK456 187551 Complete

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
	FRONT CONTROL PANEL MFP1	— 179900	Board
CR3403	Diode	175393	Power (Green)
CR3404	Diode	175394	Stereo (Red)
CR3405	Diode	175393	Audio Avail (Green)
CR3406	Diode	175394	Audio B (Red)
CR3407	Diode	(1)	RGB
SW3401	Switch	181242	Power
SW3402	Switch	181242	Volume Up
SW3403	Switch	181242	Volume Down
SW3404	Switch	181242	Channel +
SW3405	Switch	181242	Channel -
SW3406	Switch	181242	Video
SW3407	Switch	181242	Audio
SW3408	Switch	181242	Set Up
	PW4700 PW DIODE SIP	— 181158	Board
FB4700	Ferrite Bead	154042	
FB4701	Ferrite Bead	154042	
FB4702	Ferrite Bead	154042	
FB4703	Ferrite Bead	154042	
FB4704	Ferrite Bead	154042	
FB4705	Ferrite Bead	154042	
	PW6000C AUDIO/VIDEO SIP	— 182837	Board
U6101	Switch	161079	Audio
U6201	Switch	181165	Video
	PW7000 VIDEO PC BOARD	— 190021	Board
DL7701	Delay Line	189993	PW VL TRAP 2900 183502
	PW PIN SIP PW4800A	— 182847	Board
FB4803	Ferrite Bead	154052	

For SAFETY use only equivalent replacement part.

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.
Cabinet, Mask Front	MK0790 (1)
Cabinet, Mask Front	MK0808 (2)
Cabinet, Mask Front	MK0809 (3)
Cabinet, Mask Front	MK0810 (4)
Cabinet, Mask Front	MK0811 (5)
Cabinet, Mask Front	MK0812 (6)
Cabinet, Mask Front	MK0813 (7)
Cabinet, Mask & Buttons	MK0652 (8)
Cabinet, Back	BK0791 (9)
Cabinet, Back	BK0717 (10)
Cabinet, Back	BK0815 (11)

ITEM	PART No.
Cabinet, Back	BK0816 (12)
Cabinet, Back	BK0820 (13)
Cabinet, Back	BK0821 (14)
Cabinet, Back	BK0817 (15)
Cabinet, Back	BK0818 (16)
Cabinet, Back	BK0822 (17)
Cabinet, Back	BK0823 (18)
Cabinet, Back Short	BK0673 (19)
Cabinet, Back Short	BK0684 (15)
Door, Glass	182840 (15)

(1) Used in model: F27100
(2) Used in model: F27101
(3) Used in model: F27110
(4) Used in model: F27150
(5) Used in model: F27155
(6) Used in model: F27107
(7) Used in models: G27130/140/143/149/250/251/255/259/340/350
(8) Used in model: F27122
(9) Used in models: F27100/101/107/110/150/155
(10) Used in models: F272122/123
(11) Used in models: G27130/140
(12) Used in model: G27143
(13) Used in model: G27149
(14) Used in model: G27250
(15) Used in model: G27251
(16) Used in model: G27255/259
(17) Used in model: G27340
(18) Used in model: G27350
(19) Used in model: G27140

When ordering parts, state Model, Part Number, and Description

ELECTROLYTIC CAPACITORS

Items not listed are normally available at local distributors.

	ITEM No.	RATING	MFGR. PART No.
		MAIN BOARD	
		CTC 140AJ	
	C1638	10 16V 5%	162296
	C1640	10 16V 5%	162296
#	C4006	470 250V	175266
#	C4104	100 100V	181096
	C4505	2200 35V 10%	180279 (1)

	ITEM No.	RATING	MFGR. PART No.
		PW PIN SIP	
		PW4800A	
#	C4803	4.7 35V	146365

For SAFETY use only equivalent replacement part.

(1) Found in CTC140AD

CAPACITORS

	ITEM No.	RATING	MFGR. PART No.
		MAIN BOARD	
		ASSEMBLY	
		CTC140AJ	
	C1604	680 NPO 50V 5%	177804
	C1645	47 NPO 50V 5%	174409
	C1820	270 NPO 50V 5%	181084
	C1821	270 NPO 50V 5%	181084
	C2306	220 NPO 50V 10%	181087
	C2315	220 NPO 50V 10%	181087
	C2316	470 NPO 50V 10%	174416
	C2326	12 NPO 50V 5%	174403
	C2327	75 NPO 50V 5%	190011
	C2401	100 NPO 50V 5%	174412
	C2403	22 NPO 50V 5%	174406
	C2508	220 NPO 50V 10%	181087
	C2607	39 NPO 50V 5%	181090
		15 NPO 50V 5%	174404
	C2811	75 NPO 50V 5%	190011
	C2812	100 NPO 50V 5%	174412
	C2813	68 NPO 50V 5%	174410
	C2814	91 NPO 50V 5%	181092
	C2815	39 NPO 50V 5%	181090
	C2816	18 NPO 50V 5%	174405
	C2826	270 NPO 50V 5%	181084
	C2901	120 NPO 50V 5%	174414
	C2902	120 NPO 50V 5%	174414
	C2903	120 NPO 50V 5%	174414
	C2904	470 NPO 50V 10%	174416
	C3101	100 NPO 50V 5%	174412
	C3107	47 NPO 50V 5%	174409
	C3108	47 NPO 50V 5%	174409
	C3136	100 NPO 50V 5%	174412
	C3137	100 NPO 50V 5%	174412
	C3138	100 NPO 50V 5%	174412
	C3139	39 NPO 50V 5%	181090
	C3143	100 NPO 50V 5%	174412
	C3151	47 NPO 50V 5%	174409
	C3152	47 NPO 50V 5%	174409
		PW DIODE SIP	
		PW4700	
	C4701	560 N1500 1.5KV 5%	146821
		VIDEO PC BD	
		PW7000	
	C7401	180 NPO 50V 5%	146418

	ITEM No.	RATING	MFGR. PART No.
	C3303	68 NPO 50V 5%	174410
	C3308	100 NPO 50V 5%	174412
	C3309	68 NPO 50V 5%	174410
	C3310	100 NPO 50V 5%	174412
	C3316	68 NPO 50V 5%	174410
	C3323	12 NPO 50V 5%	174403
	C3324	12 NPO 50V 5%	174403
	C3325	12 NPO 50V 5%	174403
	C3335	47 NPO 50V 5%	174409
	C3336	47 NPO 50V 5%	174409
	C3337	47 NPO 50V 5%	174409
	C3342	39 NPO 50V 5%	181090
#	C4002	680 1KV 20%	160131
#	C4003	680 1KV 20%	160131
#	C4004	680 1KV 20%	160131
#	C4005	680 1KV 20%	160131
#	C4008	.005 1.4KV	161374
#	C4009	.22 600V 20%	175604
	C4106	470 NPO 50V 10%	174416
	C4110	560 N1500 1.5KV 5%	146821
	C4111	39 NPO 50V 5%	181090
	C4112	270 NPO 50V 5%	157201
	C4113	120 NPO 50V 5%	174414
	C4202	470 NPO 50V 10%	174416
	C4303	100 NPO 50V 5%	174412
	C4306	18 NPO 50V 5%	174405
	C4307	100 NPO 50V 5%	174412
	C4311	470 NPO 50V 10%	174416
	C4313	47 NPO 50V 5%	174409
#	C4400	560 N1500 1.5KV 5%	146821
#	C4401	560 N1500 1.5KV 5%	146821
#	C4402	.0155 1.2KV 2%	161372
#	C4403	.56 250V 5%	190001
		.43 250V 5%	190000
	C4600	470 NPO 50V 10%	174416
#	C4901	150 250V 10%	141722
		PW PIN SIP	
		PW4800A	
#	C4804	.047 400V 5%	161203
	C7805	100 NPO 50V 5%	143871

When ordering parts, state Model, Part Number, and Description

CAPACITORS

Items not listed are normally available at local distributors.

ITEM No.	RATING	MFGR. PART No.
	TCCQ-1A U/V	
	TUNER	
C1	470 NPO 50V 10%	174416
C2	470 NPO 50V 10%	174416
C3	470 NPO 50V 10%	174416
C4	470 NPO 50V 10%	174416
C5	470 NPO 50V 10%	174416
C6	1500 NPO 50V ±.5pF	192051
C7	1 NPO 50V ±.5pF	181457
C8	470 NPO 50V 10%	174416
C10	470 NPO 50V 10%	174416
C11	22 NPO 50V 10%	192042
C12	2 NPO 50V ±.5pF	192043
C13	470 NPO 50V 10%	174416
C14	5 NPO 50V ±.25pF	192044
C15	7 NPO 50V 1.5pF	192045
C16	470 NPO 50V 10%	192040
C17	470 NPO 50V 10%	192040
C18	470 NPO 50V 10%	192040
C19	470 NPO 50V 10%	192040
C23	470 NPO 50V 10%	192040
C24	82 NPO 50V 5%	192049
C25	470 NPO 50V 10%	192040
C26	.5 NPO 50V ±.25pF	174395
C31	470 NPO 50V 10%	174416
C33	27 NPO 50V 10%	192050
C35	470 NPO 50V 10%	192040
C36	470 NPO 50V 10%	192040
C38	1500 NPO 50V ±.25pF	192051
C39	220 NPO 50V 10%	192052
C40	6 NPO 50V ±.5pF	181452
C41	3 NPO 50V ±.25pF	192053
C42	180 NPO 50V 10%	193338
C43	470 NPO 50V 10%	192040
C44	470 NPO 50V 10%	174416
C47	470 NPO 50V 10%	192040
C49	5 NPO 50V ±.25pF	192044
C50	470 NPO 50V 10%	174416
C52	120 NPO 50V 10%	192055
C53	470 NPO 50V 10%	174416
C54	3.9 NPO 100V ±.25pF	193336
C55	100 NPO 50V 10%	175399
C56	220 NPO 50V 10%	192052
C57	470 NPO 50V 10%	192040
C58	150 NPO 50V 10%	192056
C62	470 NPO 50V 10%	174416
C64	91 NPO 50V 5%	192057
C65	18 NPO 50V 10%	193337
C66	100 NPO 50V 10%	175399
C67	150 NPO 50V 10%	192056
C70	470 NPO 50V 10%	192040
C71	220 NPO 50V 10%	192052
C72	4 NPO 50V ±.5pF	192058
C73	120 NPO 50V 10%	192055
C75	27 NPO 50V 10%	192050
C76	5 NPO 50V ±.25pF	192044
C77	10 NPO 50V 1%	174402
C78	2 NPO 50V ±.5pF	192043
C80	39 NPO 50V 5%	181090
C86	470 NPO 50V 10%	174416
C87	22 NPO 50V 10%	192042
C91	75 NPO 50V 5%	192061
C94	27 NPO 50V 10%	192050
C113	470 NPO 50V 10%	192040
C114	10 NPO 50V 1%	174402
C503	470 NPO 50V 10%	192040
C504	470 NPO 50V 10%	192040
	ADT-4 TUNING SYSTEM	
C1	22 N750 50V 5%	181449
C2	.5 NPO 50V ±.25pF	174395
C3	470 NPO 50V 10%	174416
C4	6 NPO 50V ±.5pF	181452
C5	470 NPO 50V 10%	174416
C6	.5 NPO 50V ±.25pF	174395
C9	470 NPO 50V 10%	174416
C10	1.5 N750 50V ±.25pF	181453
C11	470 NPO 50V 10%	174416
C12	20 N750 50V 5%	181454
C13	470 NPO 50V 10%	174416
C14	470 NPO 50V 10%	174416
C15	22 N750 50V 5%	181449
C16	18 NPO 50V 10%	181455
C17	470 NPO 50V 10%	174416
C18	4 NPO 50V ±.25pF	181456
C19	470 NPO 50V 10%	174416
C20	1 NPO 50V ±.5pF	181457
C21	470 NPO 50V 10%	174416
C22	8.2 NPO 50V ±.5pF	181458
C23	2.7 NPO 50V ±.25pF	181459
C24	470 NPO 50V 10%	174416
C25	4 NPO 50V ±.25pF	181456
C31	470 NPO 50V 10%	174416
C33	27 NPO 50V 5%	174407
C35	470 NPO 50V 10%	174416
C36	470 NPO 50V 10%	174416
C38	1.5 NPO 50V ±.25pF	181461

For SAFETY use only equivalent replacement part.

RCA

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	NTE PART No.	
R4702	8250 1% 1/4W Metal Film	183130		
	8870 1% 1/4W Metal Film	161098		
R4703	5100 5% 3W Flameproof Metal Film	181236	3W251	
# R4711	22 5% 1/2W Flameproof Carbon Film	163285	HW022	
# R4900	100 5% 1/4W Flameproof Carbon Film	829110	QW110	
# R4901	22.1K 1% 1/2W Metal Film	185140		
	23.2K 1% 1/2W Metal Film	161295		
# R4902	39.2K 1% 1/2W Metal Film	143786		
# RT4200	4.6 Cold PTC	190002		
	PW PIN SIP PW4800A			
R4805	1500 2% 1/4W Carbon Film	175367	QW215	
# R4822	560 5% 1/4W Flameproof Carbon Film		QW156	
# R4824	10K 5% 1/4W Carbon Film	157213	QW210	
# R4825	10K 5% 1/4W Carbon Film	157213	QW310	
	PW VLT SIP			
R2972	1000 1% 1/4W Carbon Film	179753		
R2973	365 1% 1/4W Metal Film	181411		
R2978	715 1% 1/4W Metal Film	181412		
R2979	357 1% 1/4W Metal Film	183122		
	VIDEO PC BOARD PW7000			
# R7101	62 2% 1W Flameproof Metal Film	190037	1W062	
R7403	1800 2% 1/4W Carbon Film	190038	QW218	
R7404	10K 2% 1/4W Carbon Film	175317	QW310	
R7702	2400 2% 1/8W Carbon Film	176876	EW224	
R7706	10K 2% 1/4W Carbon Film	175317	QW310	
R7711	10K 2% 1/4W Carbon Film	175317	QW310	
R7712	2700 2% 1/4W Carbon Film	176648	QW227	

For SAFETY use only equivalent replacement part.

COILS & TRANSFORMERS

ITEM No.	FUNCTION	MFGR. PART No.	OTHER IDENTIFICATION	NOTES
# L4599	Yoke 110° Horiz 1.08mh Vert 11.5mh	Bonded to CRT	2G27002-502 (1)	
# T4100	Switched Mode VIPUR OUT	190014	2847401-502 (1)	
	Alt	190015		
# T4300	Horiz Driver	159899	2821709-4 (1)	
# T4400	Horiz Out	181094	1455884-501 (1)	
	Alt	182826		
	Alt	190022		
# T4501	Pincushion	190006	3100-01A (1)	
# T4600	On/Off	179722	131-3 (1)	
# T4650	Power	179725	2863226-002 (1)	

For SAFETY use only equivalent replacement part.
(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1900, SP1901	4 11/16 PC PM 8 Ohms	183168		
SP1902, SP1903	2" Pizo 8 Ohms	187964		

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

COILS (RF-IF)

ITEM No.	FUNCTION	MFGR. PART No.
	FRONT CONTROL PANEL MFP 1	
L3401	Trap (56.9kHz)	181240
	MAIN BOARD CTC140AJ/AD	
L2100	RF Choke (68uH)	153987
L2300	RF Choke	192290
L2301	Trap	181130
L2202	RF Choke	181135
L2303	RF Choke	183121
L2304	V IF	181134
L2305	V IF	181133
L2306	Disc (26.6uH)	181129
L2307	RF Choke	183120
L2308	IF Tank (.16uH)	181128
L2309	Peaking (15uH)	161089
L2310	RF Choke (22uH)	149176
L2311	RF Choke (56uH)	161090
L2312	DET (.16uH)	181128
L2313	AFT	181143
L2314	RF Choke	183120
L2315	RF Choke	183120
L2316	RF Choke	183121
L2318	RF Choke (2.2uH)	181146
L2401	Peaking 9390uH)	181149
L2601	RF Choke (8.2uH)	149170
L2602	Chroma Phase (18uH)	181131
L2603	RF Choke (6.8uH)	181148
L2604	RF Choke	149167
L2730	Peaking (27uH)	190017
L2731	Peaking (27uH)	190017
L2732	Peaking (27uH)	190017
L2801	Peaking (47uH)	149173
L2802	Peaking (27uH)	160517
L2803	Peaking (39uH)	154050
L2806	RF Choke (8.2uH)	149170
L3101	RF Choke (10uH)	156370
L3301	Oscillator (26uH)	181132
L3601	RF Choke (100uH)	161243
# L4001	Line Choke	164597
L4100	Choke (2.2uH)	181145
L4101	RF Choke	192691
L4300	Horiz Osc (200uH)	160145
L4401	Centering Choke	175432
# L4402	Horiz Linearity	193335
L4403	Peaking (3.8uH)	153986
L4701	RF Choke (68uH)	146157
	PW 4700 PD DIODE SIP	
L4700	RF Choke	192691

ITEM No.	FUNCTION	MFGR. PART No.
	PW 5000A KINE SOCKET	
L5001	Peaking (3.3uH)	181147
L5002	Peaking (3.3uH)	181147
L5003	Peaking (3.3uH)	181147
L5004	RF Choke (150uH)	189987
L5005	RF Choke (150uH)	189987
L5006	RF Choke (150uH)	189987
	PW 7000 VIDEO PC BOARD	
L7401	Peaking (220uH)	161244
L7802	Peaking (27uH)	160517
	PW PIN SIP PW4800A	
# L4801	RF Choke	182832
L4802	RF Choke	185434
L4803	RF Choke	175433
	TCCQ-1A U1V TUNER	
L1	Peaking	
L2	Peaking	
L3	Peaking	
L4	Peaking	
L5	Peaking	
L6	Peaking (4.7uH)	158726
L7	Peaking (8.2uH)	181472
L9	Peaking	
L10	Peaking	
L11	Peaking	
L12	Peaking	
L13	RF Choke	
L14	Peaking	
L15	Peaking (1uH)	181473
L16	Peaking	
L17	Peaking	
L18	RF Choke	
L19	Peaking	
L20	Peaking	
L21	RF Choke	
L22	Peaking	
L25	Peaking	
L26	RF Choke	
L27	Peaking	
L28	Peaking	

For SAFETY use only equivalent replacement part.

PF Set 2709-1 RCA

<depth of box is pre-set to allow positioning under main head>

MAIN BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE

C1102	R-24	C2731	L-14	C3133	H-24	C3341	I-19	JC2300	N-20
C1601	H-28	C2732	K-15	C3135	D-24	C3342	H-21	JC2301	K-20
C1608	K-27	C2802	L-13	C3136	E-25	C3604	M-20	JC2302	M-21
C1612	H-27	C2804	G-15	C3137	E-25	C3605	L-20	JC2501	T-23
C1614	G-27	C2805	I-15	C3138	E-25	C3607	M-19	JC2502	P-25
C1617	G-28	C2806	I-15	C3139	E-25	C3609	M-18	JC2505	T-23
C1645	E-28	C2809	J-15	C3140	E-24	C3610	K-19	JC2506	Q-23
C1820	P-27	C2810	I-15	C3141	C-25	C4102	C-5	JC2600	D-16
C1821	R-26	C2811	G-14	C3142	D-25	C4103	D-6	JC2610	N-17
C1912	L-17	C2812	G-14	C3143	C-25	C4106	G-5	JC2611	Q-17
C1915	O-29	C2813	H-15	C3144	D-21	C4108	D-5	JC2612	U-24
C1916	P-29	C2814	G-15	C3145	H-19	C4109	F-6	JC2701	K-17
C2201	Q-15	C2815	F-15	C3147	K-24	C4111	D-5	JC2702	G-17
C2202	Q-15	C2816	F-14	C3149	G-24	C4113	D-5	JC2803	D-24
C2203	Q-15	C2817	G-15	C3150	H-23	C4114	H-5	JC2804	E-13
C2204	Q-14	C2818	G-15	C3151	H-23	C4117	H-4	JC2904	R-14
C2205	Q-15	C2820	E-16	C3152	H-23	C4202	G-5	JC2905	S-15
C2206	Q-15	C2821	H-15	C3206	C-20	C4300	J-11	JC2906	S-15
C2207	Q-15	C2826	I-14	C3301	C-24	C4303	K-12	JC2908	S-14
C2208	Q-13	C2827	J-14	C3302	I-19	C4306	K-9	JC3111	E-23
C2209	T-21	C2901	S-16	C3303	I-19	C4307	K-9	JC3113	E-23
C2210	T-21	C2902	S-15	C3304	J-21	C4310	L-10	JC3114	E-23
C2211	T-20	C2903	S-14	C3305	H-21	C4311	I-12	JC3115	F-23
C2212	T-22	C2907	S-16	C3306	I-20	C4313	K-10	JC3306	J-21
C2302	N-19	C2908	T-17	C3307	H-21	C4318	K-10	JC3307	B-21
C2303	N-19	C3101	B-23	C3308	I-21	C4500	J-12	JC3308	I-19
C2304	N-20	C3102	B-23	C3309	I-21	C4509	G-12	JC3309	H-19
C2305	N-20	C3103	B-23	C3310	I-21	C4515	E-12	JC3312	K-18
C2306	O-20	C3104	B-23	C3311	H-21	C4516	D-11	JC3313	M-17
C2307	N-21	C3105	B-23	C3312	H-21	C4600	G-6	JC3315	J-19
C2308	M-21	C3106	B-22	C3313	F-19	C4603	F-7	JC3316	J-19
C2310	O-19	C3107	B-22	C3314	D-23	C4604	F-9	JC3317	I-21
C2315	P-21	C3108	B-22	C3316	I-20	C4605	C-15	JC3318	A-22
C2316	K-22	C3109	B-21	C3317	J-21	C4650	C-16	JC3319	B-21
C2318	L-22	C3110	B-21	C3318	J-21	C4651	A-14	JC3620	L-17
C2319	L-22	C3111	J-24	C3319	I-21	C4652	D-14	JC3621	K-20
C2320	K-24	C3112	J-25	C3320	I-21	C4655	C-14	JC4100	E-6
C2321	M-24	C3113	J-25	C3321	J-21	C4657	C-14	JC4101	D-7
C2323	M-21	C3114	I-25	C3322	E-19	C4658	D-14	JC4501	H-10
C2325	O-23	C3115	H-25	C3323	E-19	C4659	B-15	JC4502	H-12
C2326	N-23	C3116	H-25	C3324	D-19	JC1101	P-27	JC4503	H-11
C2327	N-23	C3117	H-25	C3325	E-19	JC1102	R-25	JC4603	B-25
C2328	N-22	C3118	G-25	C3326	G-19	JC1103	U-29	JC4604	U-24
C2329	N-22	C3119	G-25	C3327	G-20	JC1104	U-29	JC4605	A-25
C2401	I-18	C3120	H-25	C3329	F-20	JC1615	G-28	JC4700	R-13
C2403	D-17	C3121	G-25	C3330	F-20	JC1616	K-27	JC4701	R-12
C2405	C-17	C3122	I-23	C3331	G-20	JC1617	H-26	Q1802	M-28
C2508	L-21	C3123	J-24	C3332	G-20	JC1801	U-5	Q1803	O-28
C2509	O-20	C3124	F-25	C3333	G-20	JC1802	T-27	Q1804	Q-25
C2517	L-21	C3125	E-20	C3334	G-19	JC1803	T-27	Q1805	P-28
C2604	N-14	C3126	G-25	C3335	F-21	JC1804	O-28	Q1900	K-28
C2605	N-15	C3127	F-25	C3336	F-21	JC1805	L-29	Q2302	N-25
C2606	N-15	C3128	G-25	C3337	G-21	JC1901	P-30	Q2401	C-18
C2607	M-15	C3129	H-24	C3338	C-24	JC2105	R-18	Q2501	O-21
C2703	H-14	C3130	F-25	C3339	F-19	JC2201	P-13	Q2502	O-21
C2730	K-15	C3131	C-19	C3340	L-17	JC2202	Q-13	Q2506	K-25

MAIN BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE continued

Q2507	K-25	R1632	E-29	R2310	N-21	R2615	M-15	R2910	S-13
Q2601	M-16	R1633	D-30	R2311	M-21	R2616	P-15	R2911	S-13
Q2602	P-15	R1634	D-30	R2312	K-21	R2617	M-16	R2912	S-13
Q2701	J-17	R1635	B-28	R2313	K-20	R2701	J-17	R2913	T-15
Q2702	K-16	R1637	E-28	R2314	N-22	R2702	K-17	R2914	T-15
Q2800	M-13	R1638	F-28	R2316	L-24	R2703	K-17	R2915	T-14
Q2801	D-19	R1639	F-29	R2318	L-20	R2704	K-17	R2916	T-15
Q2901	S-15	R1641	B-26	R2319	N-20	R2705	K-17	R2917	T-15
Q2902	S-14	R1642	B-25	R2320	L-22	R2707	K-17	R2918	T-14
Q2903	S-14	R1643	B-25	R2321	L-23	R2709	M-16	R2919	T-15
Q2904	T-16	R1645	C-27	R2322	M-23	R2710	L-16	R2920	T-15
Q2905	S-16	R1646	B-27	R2323	M-22	R2711	G-16	R2921	S-14
Q2906	S-15	R1647	C-28	R2324	M-24	R2712	G-16	R2922	T-16
Q2907	R-13	R1649	C-27	R2325	O-24	R2713	G-16	R2923	T-16
Q2908	P-14	R1650	D-28	R2329	O-24	R2716	D-18	R2924	T-16
Q3101	C-22	R1651	D-28	R2330	O-25	R2717	G-16	R2926	R-16
Q3102	C-23	R1652	C-27	R2331	O-20	R2718	F-16	R2930	R-15
Q3103	C-23	R1653	B-27	R2334	O-23	R2719	F-16	R2931	R-15
Q3104	C-23	R1654	B-27	R2335	O-23	R2720	H-17	R2933	R-15
Q3105	C-22	R1655	B-27	R2337	O-24	R2723	F-17	R2934	S-15
Q3106	F-25	R1656	D-26	R2338	O-20	R2724	E-17	R2935	S-15
Q3107	C-19	R1657	E-29	R2339	M-23	R2725	H-17	R2936	S-14
Q3108	E-20	R1658	H-26	R2340	K-21	R2726	I-17	R2937	T-16
Q3111	J-23	R1659	A-26	R2344	M-24	R2730	F-16	R2938	T-15
Q3112	J-23	R1800	M-29	R2345	P-23	R2731	F-16	R2939	T-15
Q3113	F-25	R1801	M-28	R2402	D-18	R2732	G-16	R2951	T-14
Q3301	H-19	R1802	M-28	R2403	D-18	R2801	L-13	R2952	T-14
Q3303	D-20	R1803	N-28	R2404	D-17	R2802	E-14	R2953	T-14
Q3701	B-16	R1810	O-30	R2405	C-17	R2803	K-14	R3101	D-22
Q3702	B-16	R1812	N-27	R2408	C-19	R2805	H-14	R3102	D-23
Q4200	B-11	R1813	N-27	R2501	P-21	R2806	H-14	R3103	D-23
R1100	R-25	R1814	M-27	R2502	O-20	R2807	G-15	R3104	D-23
R1101	R-24	R1815	M-27	R2505	P-23	R2808	I-14	R3107	C-22
R1103	R-25	R1816	R-25	R2506	T-22	R2809	G-14	R3108	C-21
R1106	S-25	R1817	P-28	R2507	Q-21	R2810	H-15	R3109	I-24
R1600	J-30	R1818	O-28	R2508	K-24	R2811	H-14	R3110	I-24
R1601	J-29	R1819	O-28	R2510	L-25	R2812	E-15	R3111	J-24
R1605	H-29	R1820	Q-26	R2511	K-2	R2813	E-16	R3112	J-24
R1608	G-29	R1821	O-28	R2512	O-21	R2814	H-15	R3113	I-24
R1609	I-29	R1822	Q-26	R2513	L-24	R2815	I-14	R3114	I-24
R1610	G-30	R1823	Q-27	R2514	M-25	R2816	H-15	R3115	I-25
R1611	G-28	R1824	O-27	R2515	P-21	R2817	E-16	R3116	I-15
R1614	K-20	R1900	M-30	R2516	O-21	R2818	F-15	R3117	F-22
R1615	G-30	R1904	L-28	R2517	K-24	R2819	F-14	R3118	F-24
R1616	H-27	R1910	O-29	R2518	L-24	R2820	I-14	R3120	D-20
R1617	I-27	R2104	R-19	R2519	O-21	R2821	F-15	R3121	E-23
R1618	F-27	R2205	Q-15	R2520	U-22	R2822	J-14	R3122	E-23
R1620	E-29	R2300	O-18	R2601	P-16	R2823	D-19	R3123	E-21
R1623	B-27	R2301	O-19	R2602	O-14	R2824	C-19	R3124	D-21
R1624	I-27	R2302	N-19	R2603	O-15	R2901	S-15	R3125	D-21
R1625	B-28	R2303	M-18	R2607	M-16	R2902	S-14	R3126	E-22
R1626	A-29	R2305	N-19	R2609	N-15	R2903	S-14	R3127	E-22
R1628	B-29	R2306	N-19	R2611	O-15	R2904	R-15	R3128	F-25
R1629	B-28	R2307	N-20	R2612	M-14	R2905	R-15	R3129	C-26
R1630	D-29	R2308	P-18	R2613	N-15	R2906	R-14	R3130	D-22
R1631	D-29	R2309	P-19	R2614	N-16	R2907	R-13	R3131	H-24

MAIN BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE continued

R3132	C-19
R3133	B-19
R3134	H-24
R3135	H-24
R3136	H-24
R3137	G-24
R3138	G-24
R3139	G-24
R3140	G-24
R3142	J-24
R3143	F-24
R3144	F-22
R3145	F-24
R3146	H-24
R3147	F-25
R4148	E-24
R3149	D-25
R3150	D-25
R3151	H-22
R3152	E-25
R3153	E-23
R3155	E-23
R3156	E-23
R3157	F-23
R3159	H-23
R3161	K-21
R3162	J-22
R3163	J-22
R3164	J-23
R3165	I-23
R3169	F-24
R3170	D-20
R3301	B-24
R3302	I-21
R3303	I-19
R3304	H-19
R3305	H-20
R3306	F-23
R3307	F-23
R3308	F-23
R3310	I-21
R3311	I-21
R3312	J-21
R3313	J-21
R3314	C-24
R3318	I-21
R3319	J-21
R3320	J-21
R3321	J-21
R3322	F-21
R3323	F-21
R3324	F-21
R3325	F-21
R3326	G-19
R3328	D-23
R3329	F-20
R3330	F-20
R3332	F-19
R3333	G-19
R3334	G-19
R3335	G-19
R3336	G-19
R3337	F-19
R3338	F-19
R3339	G-19
R3340	G-19
R3341	F-19
R3342	F-19
R3343	G-19
R3344	G-21
R3345	G-21
R3346	J-19
R3347	I-19
R3348	H-20
R3349	H-20
R3350	H-20
R3351	G-20
R3352	H-19
R3354	G-22
R3355	G-19
R3356	I-19
R3357	I-19
R3360	F-20
R3363	J-22
R3364	J-22
R3365	J-22
R3366	J-21
R3602	P-17
R3604	K-19
R3605	J-20
R3606	Q-18
R3607	M-19
R3702	B-16
R3703	B-5
R3704	B-17
R3705	B-5
R4100	C-5
R4102	C-5
R4113	D-5
R4118	G-4
R4202	C-9
R4203	B-12
R4204	D-9
R4303	K-9
R4304	K-9
R4305	K-9
R4306	J-11
R4307	J-9
R4308	K-10
R4310	K-11
R4313	K-13
R4315	J-12
R4320	M-12
R4325	N-19
R4501	I-9
R4502	H-9
R4504	H-10
R4505	D-11
R4510	G-9
R4513	K-10
R4514	K-11
R4515	F-9
R4518	H-10
R4519	E-13
R4520	E-12
R4521	H-12
R4601	E-6
R4602	F-7
SG1800	R-30
SG1900	P-29
SG1901	Q-28